

# Railway Age

WITH WHICH IS INCORPORATED THE RAILWAY REVIEW

FIRST HALF OF 1927—No. 2

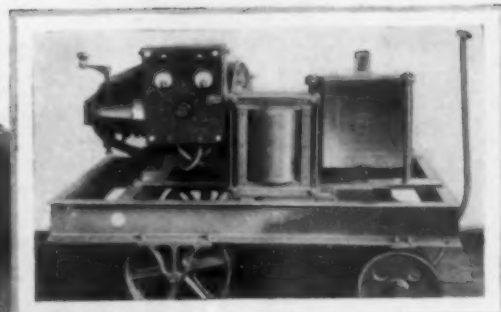
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# Railway Age

Vol. 82 January 8, 1927 No. 2



A Two-Car Mid-day Electric Suburban Train on the Illinois Central, Chicago—Photo by Ewing Galloway

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# Railway Age

Vol. 82, No. 2

January 8, 1927

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## *The Watson-Parker Labor Law*

**T**HE result of the arbitration of the trainmen's wage question in the eastern district has caused much comment among railroad men and in the public press concerning the limitations and inadequacies of the Watson-Parker railroad labor law. Just what can be expected from legislation of this kind? Is there such a thing as an ultimate solution of the wage question on the railroads or in the industries? What part can legislation have in the solution of railroad or industrial labor problems? Before these questions can be answered intelligently we must understand something of the underlying philosophy of the so-called labor problem. The possibilities of the labor act on this basis are discussed in another part of this paper in an article by Hayes Robbins, entitled, *Panaceas and Possibilities*.

## *Car Heating Both Difficult and Expensive*

**F**EW people appreciate either the difficulty or the expense involved in heating railway passenger equipment, particularly in northern parts of the country where temperatures of 15 deg. below zero are not uncommon. It might pay the railroads to bring some of these difficulties, and the way they are being solved, to the attention of the general public. A passenger car is essentially a room on wheels with a large proportion of window area and exposure on all sides, and passes at high speed through blizzards, sleet storms and all kinds of inclement weather. Tests have shown that the modern steel passenger car can be heated with about 2.85 lb. of steam per hour per degree difference in internal and external temperatures. This difference may reach 75 deg. or more and in a 15-car train, therefore, 3,200 lb. of steam per hour are required, or roughly eight per cent of the locomotive boiler capacity. On a coal basis, it has been figured that as much as 40 tons of coal per year may be required for heating a single passenger car, or three times that necessary to heat the average six or eight-room house. The magnitude of fuel consumption for train heating purposes makes it imperative that present practices be checked with the greatest care to see what improvements can be made and what heat losses eliminated. Some of the points that need special consideration are car insulation, window weather stripping and ventilators. Heat losses now occur at the non-insulated connections between the cars, leaky couplings, drains and at rear couplings which are opened wider than necessary. The flow of steam through 2-in. pipe in the train line is restricted in most cases, owing to the use of couplings with 1½-in. openings. It is confidently expected that tests now under way with unrestricted train lines and superheated steam will greatly improve the effectiveness of the car heating plant and enable long trains to be heated adequately under the most severe weather conditions.

## *Depreciation and Lessening of Value*

**I**T was a peculiar co-incidence that the Interstate Commerce Commission should have made public its order with respect to depreciation at about the same moment that the Supreme Court of the United States handed down its decision in the Indianapolis Water Case. The peculiar feature comes in the complete contrast between the views of the commission and those of the court. In its depreciation order the commission decided in favor of the straight line method of figuring depreciation on railway property. In the decision in the Indianapolis Water Case, the court used the term "less depreciation, if any," and it disapproved a deduction from value for depreciation which was "the result of 'a straight line' calculation based on age and the estimated or assumed useful life of perishable elements," and said: "The testimony of competent valuation engineers who examined the property and made estimates in respect of its condition is to be preferred to mere calculations based on averages and assumed probabilities." There is no gainsaying the fact that in the discussion of depreciation there is much confusion resulting from the use of the word "depreciation." Lessening of value is one thing but the depreciation that railway men know in the I. C. C. accounting classifications is another. In the railway accounts depreciation is charged to operating expenses and a reserve is set up, the purpose of which reserve is to absorb currently the ultimate cost of retiring a unit of property or to spread over the life of that unit the charge for retirements that otherwise would have to be included in operating expenses at one time when the unit is removed from service. The distinction is made clearer if it is realized that the depreciation reserve should in effect be regarded much as a fire insurance fund, the one to be drawn upon in case of retirement of property, the other in case of a fire. There would be much clearer thinking about this subject if the depreciation fund were known by some more appropriate name such possibly as the retirement reserve fund. But the distinction must be kept clear: accounting depreciation and actual lessening of value are not the same thing and the railways are fortunate that they have this on the authority of the United States Supreme Court.

## *The Accounting Officers and Cost Finding*

**T**HERE has been a surprisingly small amount of discussion of the proposed revision of the railway accounting classifications—made public early in December—in spite of the great amount of effort made by both the Railway Accounting Officers Association and the Interstate Commerce Commission to bring out such discussion. Under the circumstances it might seem right to conclude either that the railroad world is not interested in the classifications or that those interested have found



it difficult to make up their minds as to whether the new classifications are an improvement or not. The views already expressed by the *Railway Age* concerning the new classifications may possibly be typical of those held in many other quarters. It expressed the view that inasmuch as the Bureau of Accounts and the Railway Accounting Officers Association had harmoniously agreed on the new classifications the latter would probably be adopted without substantial change. But it suggested also that people outside of the accounting department were very likely wondering why the bureau and the accounting officers had not given consideration to the important element of cost accounting or cost finding and suggested that the accounting officers might be well advised to explain their position in this respect to their fellow railway officers. There is reason to believe that this expression of opinion has been misconstrued to mean that the *Railway Age* is in favor of cost accounting and its inclusion in the new classifications. This is not the case. The *Railway Age* is not yet convinced that what is generally known as railway cost accounting is feasible nor does it necessarily believe that even if it were feasible it should be included in the classification. But it is persuaded that the opinion is held in various quarters that there may be something in railway cost accounting and that the accounting officers are evading an issue that has been quite clearly put before them—notably in a letter from a member of the Interstate Commerce Commission submitted at one of the annual meetings of the accounting officers. That opinion, held in some quarters, may not be well founded, but it is undoubtedly a factor in the dearth of discussion regarding the proposed classifications. Is the next move up to the accounting officers?

### *Is Improving Appearance of Equipment Economically Justifiable?*

OUR London contemporary, the *Railway Gazette*, preliminary to brief editorial mention on the increased interest being shown in America in improving the appearance of locomotives, says: "It has always been a practice with railway companies in Great Britain to have their locomotives painted and lettered in attractive styles, and no one with knowledge of the subject will be likely to contest the value, from the publicity point of view, of such a step." This is a strong statement and one which certainly would not hold true everywhere on this continent. However, there are undoubtedly a great many American railroad men who are coming around to something like this point of view. Railroads like other business enterprises must be governed by economic considerations. Does the added expense of making locomotives—and cars too—more attractive bring proportionate returns in greater public favor and improved employee morale? We realize that conclusions in answer to such a question must be rather indefinite, since there is no way of measuring cent for cent the actual monetary return from better public and employee feeling. However, railroad men are not visionaries and when they spend real money they can generally show where it goes and why and what it brings in. What, then, has been the experience of roads on which they base strong policies either favoring or against extensive improvements in appearance of equipment? We invite a frank expression of experiences and opinions, such as that vouchsafed by S. M. Felton, chairman of the Chicago Great Western, in his letter to the editor published in our issue of December 11. If such activities

pay, then they should be more widespread. If they are not worth the effort and expense, then the energy and money ought to be spent elsewhere.

### *Political Appointments to I. C. C.*

IF the idea of appointing members of the Interstate Commerce Commission to please certain sections or groups that want something in particular is to develop much farther it may be necessary to adopt the plan of having regional commissions in order to provide enough places to go around. A commission of 11 members is not big enough to provide for all the states whose Senators recently have been demanding representation on the commission, to say nothing of all the various groups of particular interests. Practical politics apparently is having a steadily growing influence over the selection of members of the commission. The latest appointment, recently announced, seems to have been dictated by the fact that the appointee comes from Pennsylvania, one of whose Senators has been particularly vociferous in pointing out that that great state has never had a "representative" on the commission, and who is understood to have obtained a promise from the President that the next appointment would be made from Pennsylvania. Also the Pennsylvania Senator's particular interest in the subject is well known to have dated from the time when the commission in the lake cargo coal rate case, which has since been re-opened, failed to agree with Pennsylvania coal interests that their rates to the lakes should be lower as compared with the rates from other states. There is no occasion at this time to compare the personalities of the new appointee and the commissioner he is to succeed, as the latter was also appointed to represent an organized group that wanted the Pullman surcharge abolished, but the latter did not succeed in abolishing the surcharge and has now had an experience in the work of the commission for several years which should make him a better commissioner than any new man not having special qualifications.

### *Following Through in Public Relations Work*

IN the public relations work of the railways, as in golf, success lies in the follow through. A golfer who starts his stroke right but does not follow through is wasting time. The desired result, a low score, is impossible. The same is true of railway public relations activities. The beginning of the stroke is the dissemination of information which is generally thought of in connection with the term public relations work. This is the job, largely, of designated public relations officers and other executives. The follow through is the job of every other railway employee, whether of rank or not. If the follow through is neglected, as in golf, the other work is largely so much lost motion. Undoubtedly the largest single factor which has made active efforts for better public relations on the part of the railroads necessary has been the impersonalization which has followed inevitably in the wake of their expansion. Small railroads have no difficulty in making and keeping staunch friends within their own limited territories. Their managements are in personal touch with all their patrons and their affairs are a part of the intimate affairs of all their neighbors. This is not so in the case of large railroads; hence, the necessity for organized, purposeful



effort to make the sort of friends for large roads that the smaller ones have. But the important thing to be remembered is that even large railroads are closely in contact with the people of their territories through the medium of their officers of lower rank and their employees. These are in a position to apply the follow-through to the public relations stroke of the executives and thus carry it to successful completion. The enlistment of the rank and file in the work of bettering public relations is a matter of constant effort and reiteration.

## A Courageous Experiment

THE placing in service of a section of concrete track support in a high speed main line of the Pere Marquette, as described on a following page, is worthy of more than casual attention, since it involves a radical departure from existing practices in track construction. The installation is made on a sufficiently large scale, a quarter-mile of track, and under sufficiently typical conditions to demonstrate whether track must have a certain amount of resiliency or "give" to stand up under modern traffic and also whether concrete as a construction material is capable of withstanding the battering force of cars and locomotives in motion without intermediate cushioning material.

Since the earliest days track, largely of necessity, has been built with more or less resiliency. At first the loads were light and small rails supported on ties embedded in the natural soil were adequate. When loads became heavier and more numerous, the cost of maintenance of this track rose until it became economical to add ballast, to increase the size of rails and to strengthen the track structure throughout. This has continued until rails of 100-lb. section on well compacted beds of gravel and stone ballast are common and track with rails of 125-lb. section and heavier is increasing in mileage rapidly. Yet, with all, the roads have been confronted with the necessity of holding the expenditure for track construction to the minimum consistent with reasonable costs for maintenance. This has deterred them from providing a track structure much in advance of the immediate necessities of traffic, with the result that it has never possessed sufficient strength to provide a non-resilient roadbed under the loads imposed on it and the cost of maintenance has risen steadily from year to year.

In the light of this trend there are some who have felt that it should be entirely feasible to provide an entirely rigid form of construction which would require so little maintenance as to reduce the cost to such an extent that the interest on the increased cost will be more than offset. Among those who have advanced this idea have been Frank H. Alfred, president of the Pere Marquette, himself a maintenance engineer of many years' experience. Mr. Alfred expressed this thought in an address at the annual dinner of the American Railway Engineering Association at Chicago in March, 1925 (abstracted in the *Railway Age* of March 12, 1925), and later expanded his ideas in an article published in the *Railway Age* of December 12, 1925. In this article he presented a design of slab which in the main has been followed in the installation just made.

Whether railway men agree with those who share Mr. Alfred's views or differ with them, and the latter are undoubtedly in the majority at present, it cannot be denied that this installation constitutes a real contribution to the development of track design for which Mr. Alfred and his road deserve commendation. If this installation succeeds, it will mark the beginning of a new era in track construction. If it fails, it will set at rest the arguments

of those who have contended that some form of more rigid and more permanent construction was warranted. Regardless of the outcome, it will add materially to current knowledge of track construction and is worthy of the most careful observation.

## Are Modern Locomotives Expensive?

MUCH attention has been attracted to the steam locomotive during the past two or three years because of the marked strides which have been made in its development within that period. After an era of development which was characterized by the addition of economy and capacity-increasing devices to locomotives the basic design of which had been little changed for many years, notable improvements in the design of the locomotive itself have made their appearance. The result has been that the most modern freight locomotives have high horsepower capacity in relation to size and weight. These locomotives are capable of producing ton-miles much faster than locomotives only a few years old, with marked decreases in the fuel required per 1,000 gross ton-miles.

The first costs of these locomotives are considerably higher than of locomotives which were considered modern not more than five or six years ago. In most cases, furthermore, they cost considerably more per pound of engine weight. If total first cost or cost per pound of metal is used as the measure of value, there can be no doubt as to the answer to the question "Are Modern Locomotives Expensive?" The answer is, "Yes."

Considered by itself, however, no locomotive is worth its price. Its value lies entirely in what it will do. There was a time when the value of a locomotive on this basis was measured by the train load it could start; the question of time of arrival at the next terminal did not enter into consideration. Now, however, not only is the trainload of importance, but the time required to get over the division is becoming of equal importance and, in some cases, of even greater importance. These two factors are taken into account in the comparatively new unit of gross ton-miles per train hour, and the number of gross ton-miles per train hour, other things being equal, depends directly on the horsepower capacity of the locomotive.

If this is the proper unit by which to measure the value of a locomotive in freight service, the question, "Are modern locomotives expensive?" requires a different answer. Locomotives are now being built which will develop a horsepower for little more than 100 lb. loaded engine weight. Five or six years ago it was probably an exceptional freight locomotive which would actually develop more than one horsepower for 150 lb. loaded engine weight. While all of the appliances and improvements in design which go to make up a thoroughly modern locomotive add to the cost per pound of weight—probably from 10 to 15 per cent—the cost per horsepower of these high priced locomotives will hardly be more than 80 per cent of the cost per horsepower of the simpler locomotives of conventional design representing common practice five or six years ago.

This is not the only evidence that locomotives of thoroughly modern design give the railroads more for their money than locomotives purchased by the ton. Every improvement which has increased the capacity of the locomotive has effected a reduction in the amount of fuel required to produce 1,000 gross ton-miles. There are numerous cases where the unit fuel consumption of loco-

motives that represented good practice five or six years ago has been reduced almost one-half by locomotives of thoroughly modern design. This saving alone goes far toward paying a return on the additional investment required to produce a thoroughly modern traveling power plant.

## Valuation in the Supreme Court

**W**E have entered a period when important railroad history is being made by the decisions of the federal courts regarding final valuations by the Interstate Commerce Commission. A federal court at Kansas City held last week that the valuation placed upon the Kansas City Southern was illegal because adequate weight was not given to certain elements of value. A federal court at Los Angeles had previously rendered a similar decision in a case involving the valuation of the Los Angeles & Salt Lake. This latter case is now before the Supreme court. The decision in it will or will not be of real importance according to whether the court definitely rules on the weight that must be given by the commission to cost of reproduction, going value, depreciation and other factors that are in controversy.

The quiet struggle over railroad valuation that is occurring is one of the most important struggles over property rights, measured by the amount of property involved and the economic effects that may be produced by the outcome, that ever have occurred in this or any other country. Just why there should be such wide differences of opinion regarding the way the valuation of a railroad should be made puzzles many people. They are due to a fundamental difference between the theories of two classes of persons regarding the nature and rights of railroad property. It is privately owned property devoted to a public service. Some put their emphasis on the public service to which it is devoted. Some put their emphasis on its character as privately owned property.

### What Position Will the Supreme Court Take?

In many cases in the past the lower federal courts have held that the decisions of the Interstate Commerce Commission were wrong and the Supreme court later has held that they were right. There seems hardly a remote chance that the Supreme court will uphold the way in which the commission has been making railroad valuations. The reason is that the commission seems to have accepted and been applying a widely held theory regarding the nature of the railroads as public servants largely in disregard of an unbroken and consistent series of decisions of the Supreme court regarding the nature and rights of public utilities and railroads as private property.

The fundamental legal principle upon which all the decisions of the Supreme court in valuation cases seems to have been based is that, as nearly as practicable all valuations of privately owned property made by the government in this country must be made in the same way regardless of the purposes for which they are to be used. The government may condemn and take under the power of eminent domain a piece of real estate in a city for the purpose of erecting a postoffice building. The valuation to determine what the government must pay for it must be a determination of its value at the time it is taken. If its present value is one hundred times greater than the amount its owner paid for it, the

government must pay its present value. Reasoning by analogy, the courts have held in effect that the property of a railroad is private property in the same sense as a piece of city real estate owned by some individual person. Because of the public service rendered by the railway its rates may be regulated by the government. They may not be so regulated, however, as to so reduce or limit its earning capacity as in effect partially or wholly to destroy the value of its property and thus partially or wholly confiscate it.

### Value for Rate Making Purposes

But how is the value of its property to be determined for rate making purposes? In the same way, it would appear from the decisions of the courts, as if the government were going to condemn and take it under the power of eminent domain. If it were going to do this it would have to pay the owners the present value of the property, regardless of what it cost. Its present value depends mainly on what it would cost to reproduce it by current methods at prevailing wages of labor and prices of materials. The decisions of the Supreme court recognize no fundamental distinction between the value of railroads for rate making purposes and the value of other privately owned property.

### Gross Inconsistencies

Out of these very decisions of the court, however, there has been developed a theory of valuation and regulation that seems to be wholly inconsistent with the principles recognized in them. The court for years recognized original cost of construction as evidence to be considered. The Interstate Commerce Commission in making its valuation apparently concluded that on about June 30, 1914, what the railways had actually cost and what it would cost to reproduce them were about the same. Apparently it has been proceeding upon the assumption that if it should add together the figure arrived at as of June 30, 1914, and the investment since made in the railroads, and subtract from the total a substantial amount for depreciation, it would arrive at a reasonable valuation "for rate making purposes."

A valuation made in this way seems to be open to a number of valid and fatal criticisms. It makes no allowance for the difference between what it cost to construct the part of the property in existence on June 30, 1914, and what it would cost to reproduce that part of the property at present wages and prices. It makes no allowance for the difference between the earning capacities and going values of different railroads. It assumes that railway property may have a special value for rate making purposes—an assumption entirely unsupported by any decision of the Supreme court.

What the Supreme court will say about the commission's method of making valuations we shall hear in future. Obviously the commission has adopted the widely prevalent theory that because a railway is engaged in rendering a public service, and in consequence the government can regulate its rates, this regulation can be carried out in such a way as to give effect to opinions held by members of the commission and many other persons as to what the value of the railroads *ought to be*, and not as to what their value is. There is a widely prevalent theory that because the government has the power to so regulate rates as to prevent them from being made unfairly discriminatory or extortionate it also has the power and duty to so regulate them as to promote "social justice" even if, to accomplish this purpose, railroad property must be evaluated differently from any other kind of property and restricted to a net



return less than is regarded as reasonable in other kinds of business.

### Constitution and Property Rights

The framers of the Constitution obviously had a different theory of "social justice." Their theory was that the same fundamental principles should be applied in dealing with all kinds of privately owned property, whether farm land, city real estate or railroad equipment, shops and roadway. Their theory may have been right or wrong, but the Supreme court always has upheld it and apparently always will, as long as the Constitution is not changed. The power to regulate railways unquestionably exists, but, as the Supreme court repeatedly has said "The power to regulate is not the power to destroy." Regulation of railways becomes destruction of private property when it evaluates railway property on a lower basis than the government could evaluate other kinds of property, and then bases upon a valuation thus made rates that will yield only a "fair return" or less upon it.

At least this seems to be what thus far has been held by the Supreme court to be the law of the land. The commission in its valuation work appears to have been trying not to carry out what apparently has always been held to be the law of the land, but to get it changed. The decisions of the Supreme court as to the soundness or unsoundness of the principles according to which the commission has been acting will mark an epoch in the history of the determination of property rights in the United States.

## What the Traveler Thinks

THERE can be no question but what there is today a greater degree of intelligent and enthusiastic cooperation between the employees and the railroad managements than has existed for many years. There is also a larger appreciation of the responsibility of a common carrier for rendering adequate service to the public; in other words, the employees and managements are united in a desire to render the best possible service on such terms as will best serve the mutual interests of all concerned. Physical conditions make it necessary for many of the employees to represent the railroad in dealing with the public, without close or immediate supervision. Many of the employees, therefore, although they may have the best intentions, are liable, because of lack of training or proper checking up, to make mistakes which may irritate the public, if, indeed, they do not seriously affect the standard of service rendered. Most travelers have difficulty in finding things to occupy their attention on long trips and it is quite possible that this may cause them to magnify some of the mishaps which occur. There can be no question, however, but what travelers do frequently have real causes for complaint. Many railroads recognize this, particularly in their dining car service, by soliciting criticisms and indicating exactly where they should be sent. Many travelers firmly make up their minds to write to the officers of a railroad about some of their disagreeable experiences, but usually fail to do so because of not knowing to whom to direct their letters.

If the railroad managements knew exactly what the travelers on their roads were experiencing in the way of poor service, would the information not be invaluable in helping to educate the employees as to how better to serve the traveling public? How can such information best be secured? It is necessary for responsible railroad supervisors and officers to be constantly

traveling over their properties. If they did nothing more than report to some officer at headquarters the details of complaints which they had overheard, the results might be surprising. If, however, they went one step further and made it their business, without disclosing their identity, to secure complete information about things which displease the public, the results might be astounding. Would it not be well worth while to organize a service of this sort? Is it not true that more of such information would readily be forthcoming if the supervisors or officers themselves knew just where their reports could be placed to insure their being utilized to advantage?

### What Impresses the Traveler?

What are some of the things that make an impression upon the travelers and cause them to express themselves to their fellows, favorably or otherwise? Several men in the club car on a certain train recently indicated that they used that particular train between two points where there is severe competition, because of the exceptional dining car service. Several men in another club car on another road indicated quite forcefully that they were not using another competing road because of the rough handling of the trains—and they supported their statements with specific instances. Two travelers indicated that they would not again patronize a certain road because every time they had used it they were unable to read their papers for the first half hour out of the terminal, because of the dimness of the electric lights. (It so happened that station stops had to be made within a few miles of the terminals at both ends, so that by the time the voltage was built up, a station stop had to be made and the process repeated.) Improperly marking the spaces on the berth tickets or selling the same space to two people are frequent causes of complaint. One traveler with his family, found it necessary to use a terminal station restaurant of a road which is favorably known because of its efforts to bring about more cordial relations with both the public and the employees. His experiences, because of poor service and indifference on the part of the employees, were such that judging from the expressions to his friends in the smoking room, his aversion to this particular road will not be overcome for a long time, in spite of the fact that the road has a reputation for taking excellent care of its patrons.

These are only a few typical instances of the many criticisms that can be heard if one listens carefully. They are based on concrete instances of poor service and must be differentiated from the loose talk which is so frequently grounded on misinformation. There are, for instance, many travelers—some of them men of affairs who cannot be classed as unintelligent—who still insist that the Pullman surcharge is a wicked device of the railroads to make an illegitimate profit and attempt to throw the onus on the Pullman Company. The things that apparently hurt the railroad most, however, are those due to mistakes and failures on the part of the employees, who in many cases are removed from immediate or close supervision. Cannot some way be found of forming a channel through which legitimate complaints on the part of the public can easily reach a clearing house on each railroad? They can then be followed up in a constructive way, making them the basis for an organized effort to coach and train the employees in rendering more intelligent service. It is doubtful if such a scheme can be made a success if it is based on a mechanical handling and a "please explain" basis. The individuals will have to be reached in specific cases, but it should be done in such a way as to insure that they understand the right way of doing their work and to sell them the idea of rendering more accurate, courteous and intelligent service.

# Pere Marquette Begins Test of Concrete Roadbed

*Bold departure from conventional form of track construction placed in service near Detroit*

**I**S resilience a primary requisite of a track structure? Or is it possible to avoid the unending process of surfacing track and thus greatly reduce track maintenance costs by providing a rigid track construction such as is afforded by placing the rails directly on a concrete slab? Conclusive answers to these questions should be forthcoming as a result of a service test now in progress on a quarter mile of special track construction recently completed on the Pere Marquette at Beech, Mich. If it is found upon thorough test that it is in reality a "permanent" track construction, it is the opinion of Frank H. Alfred, president and general manager of the Pere Marquette, that it will open the way to definite economies in track maintenance.

The track construction under test comprises a marked departure from previous installations of the same general class, in that it provides no cushion between the rails and the concrete substructure. A thin sheet of bituminous felt which was placed under each rail was introduced solely to provide insulation and to compensate for minor irregularities in the bearing surfaces of the steel and the concrete.

## The Test Was Carefully Planned

In arranging for a service test of this construction special pains have been taken to eliminate conditions



Concrete Apron at the End of the Slab to Facilitate Transition from Standard to Special Track Construction

which might introduce incidental factors contributing to unsatisfactory service. Thus, the site of the test is one offering exceedingly remote possibilities of subsidence or settlement. It is in a flat country with a sandy soil through which the line was constructed on a grade



Trains Were Detoured Around the Test Track During Construction

that is raised only enough above the general level of the country to insure adequate drainage. The alignment is tangent and the grade is 0.1 per cent. The construction work also has been carried out in a way that insures concrete of a high strength and a good quality of workmanship. The location is one that will impose a thorough service test. The concrete roadbed is in the westbound track of the double-track main line of the Pere Marquette between Detroit, Mich., and Plymouth, and will carry all passenger and freight traffic from Detroit to Chicago and all points on the Pere Marquette lines in western and northern Michigan. The daily movement over this track includes seven scheduled passenger trains, seven scheduled freight trains, four regular switching movements and an average of two extra freight trains. The heaviest power employed is a Santa Fe type engine having a weight of 321,000 lb., of which 264,000 lb. is on the five driver axles. As a consequence, it is believed that the behavior of this construction in service should show conclusively whether or not the idea of rigid track construction is a thoroughly sound one.

Two other considerations also influenced the selection of the site for this test. The location is a convenient one for frequent observation by officers of the railroad. It is also sufficiently remote from crossings of important highways to give ample assurance against future changes of grade for grade crossing elimination.

The special track construction embraces a quarter mile of the westbound main track and the presence at Beech of a little used passing track on the south side of the eastbound main track simplified the development of a double track detour around the test track during the time that construction was in progress.

## How the Track Slab Is Reinforced

The design of the test track conforms closely to that described in the article by Mr. Alfred and Paul Chipman (office engineer of the Pere Marquette) which appeared in the *Railway Age* of December 12, 1925, page 1083. As shown in the drawing, the rails are supported



directly on a concrete slab 10 ft. wide and 21 in. thick, reinforced by a structural steel frame supplemented by plain bars. The frame consists of two longitudinal trusses placed vertically in the planes of the two rails and tied together at intervals of 6 ft. by  $\frac{3}{4}$ -in. adjustable tie rods in the plane of the top chords, with a steel bar cross frame at the location of each alternate tie rod.

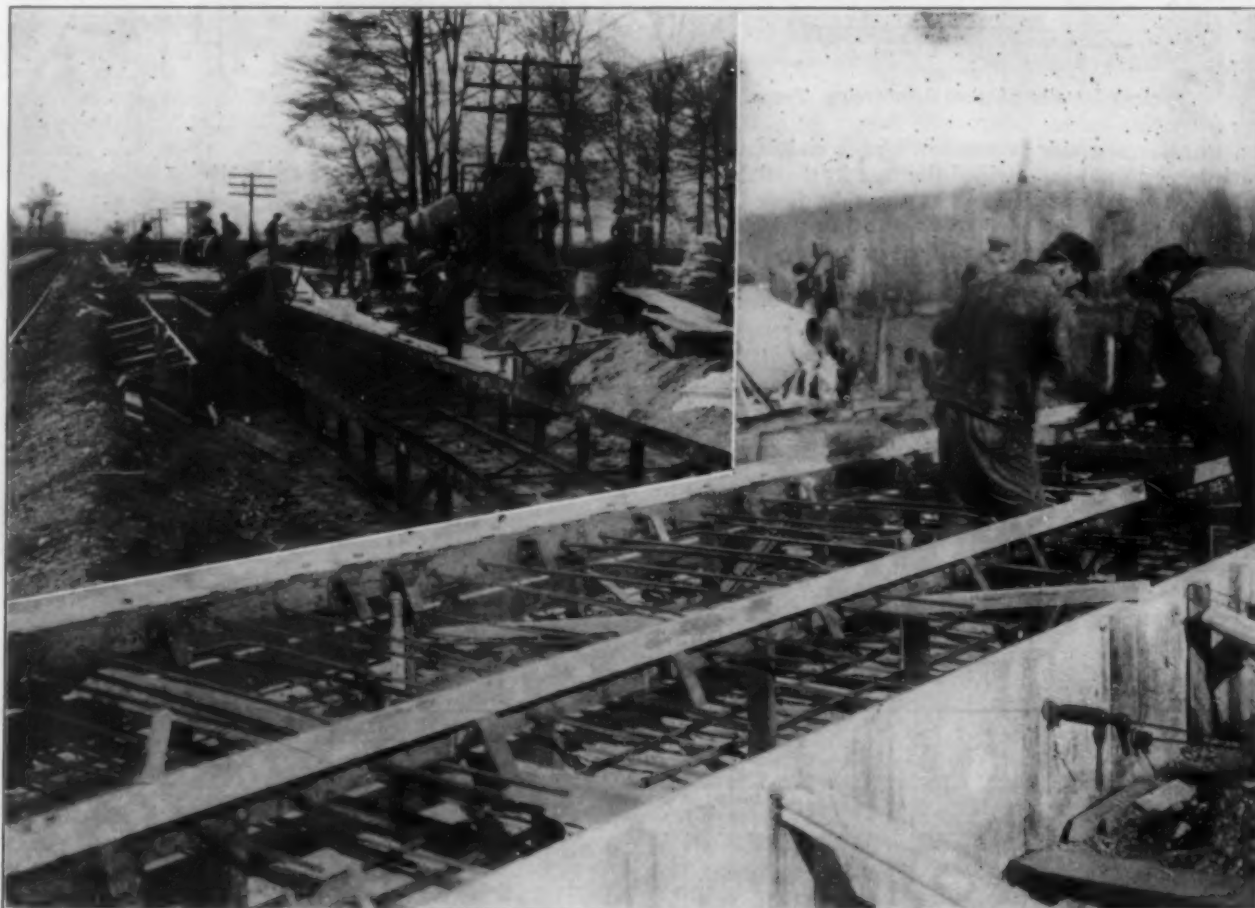
While the two trusses form the primary longitudinal reinforcement, they are supplemented by four  $\frac{3}{4}$ -in. and four  $\frac{1}{2}$ -in. square bars placed with their centers  $2\frac{1}{2}$  in. above the bottom of the slab. The transverse reinforcement consists of  $\frac{5}{8}$ -in. square bars 9 in. center to center, placed close to both the top and bottom faces of the slab.

While the top chord members of the trusses are entirely covered by concrete so that the rails have no direct

being obtained by adjusting the tie rods previously mentioned, which are threaded for a length of  $6\frac{1}{2}$  in. on each end.

#### Rails Must Be Insulated from the Slab

While this rigid connection between the rails and the steel frame was of an advantage from the structural standpoint, it imposed the necessity for providing perfect insulation of the rails from the steel reinforcement. The rails are insulated from the steel reinforcement by a thin layer of concrete and a continuous strip of a 5-ply thickness of Carey's "fibrerock" but it was also necessary to insure an effective separation of the rails from any metal of the hold-down system. This consists of the bolts previously mentioned and standard Carnegie



Two Views of the Reinforcement

contact with the reinforcement, the rails bear a fixed relation to the reinforcing trusses because the rail fastenings are rigidly connected to these trusses. At intervals of 27 in., the top chords of each truss are provided with stirrups made by bending a  $\frac{1}{2}$ -in. by 2-in. bar to the shape of an inverted double U, the bases of these U's, one on each side of the truss chord, forming the seats for rail clips held in place by  $\frac{3}{4}$ -in. hold-down bolts which pass through holes in the stirrups into nuts on the under-side. In other words, tension on the hold-down bolts exerts an uplift directly on the main system of reinforcing. This arrangement also had an advantage from the construction standpoint. Alinement of the hold-down bolts and therefore the alinement and gage of the rails, was controlled absolutely by the alinement and gage of the two reinforcing trusses which were adjusted prior to placing the concrete, the exact gage

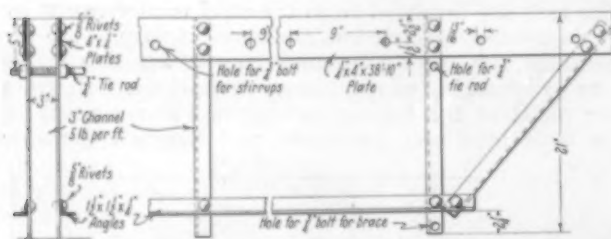
rail slips for the 90-lb. A.R.A. Type A rails with which the track is laid. The insulation at each bolt consists of one bent fibre plate and two filler plates between the clip washer and the hold-down stirrup and a flanged bushing in the bolt hole in the rail clip. The flange of this bushing is protected from abrasion from a spring washer under the head of the bolt by means of a steel plate washer.

For purposes of construction and to provide contraction joints, the concrete slab was divided into units 39 ft. long, the same as the length of the rails which were laid with staggered joints so that the joints come at the quarter point of the slabs. Positive separation of the slabs at the joints is insured by providing 24-gage sheet metal separators, these separators being shaped to form a horizontal key  $6\frac{1}{2}$  in. wide by  $2\frac{1}{2}$  in. deep which prevents the offsetting of one slab relative to the other

in the event of settlement. One side of each separation sheet was faced with Carey's Elastite filler.

#### Adequate Provision for Drainage

For drainage, the top surface of the slab was made  $\frac{1}{2}$  in. lower along the two sides and along the center line of the track than it is at the rail bearings, water accumulating in the space between the rails being caught

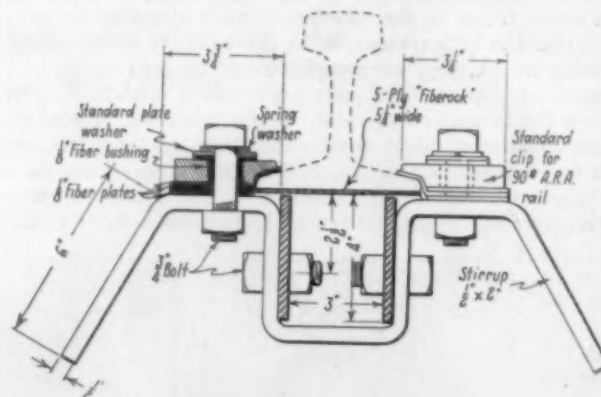


Typical Details of the Reinforcing Truss

by a transverse gutter at the downgrade end of the slab which leads to a 3-in. vitrified tile cast in the slab which connects with a drain leading to the side ditch. Effective drainage between tracks was also insured by installing a line of tile at an adequate depth along the center line of the roadbed.

To provide for re-leveling of the slabs in event of the remote contingency of settlement, 1 1/4-in. pipes extending through the slab and fitted with screw plugs at the

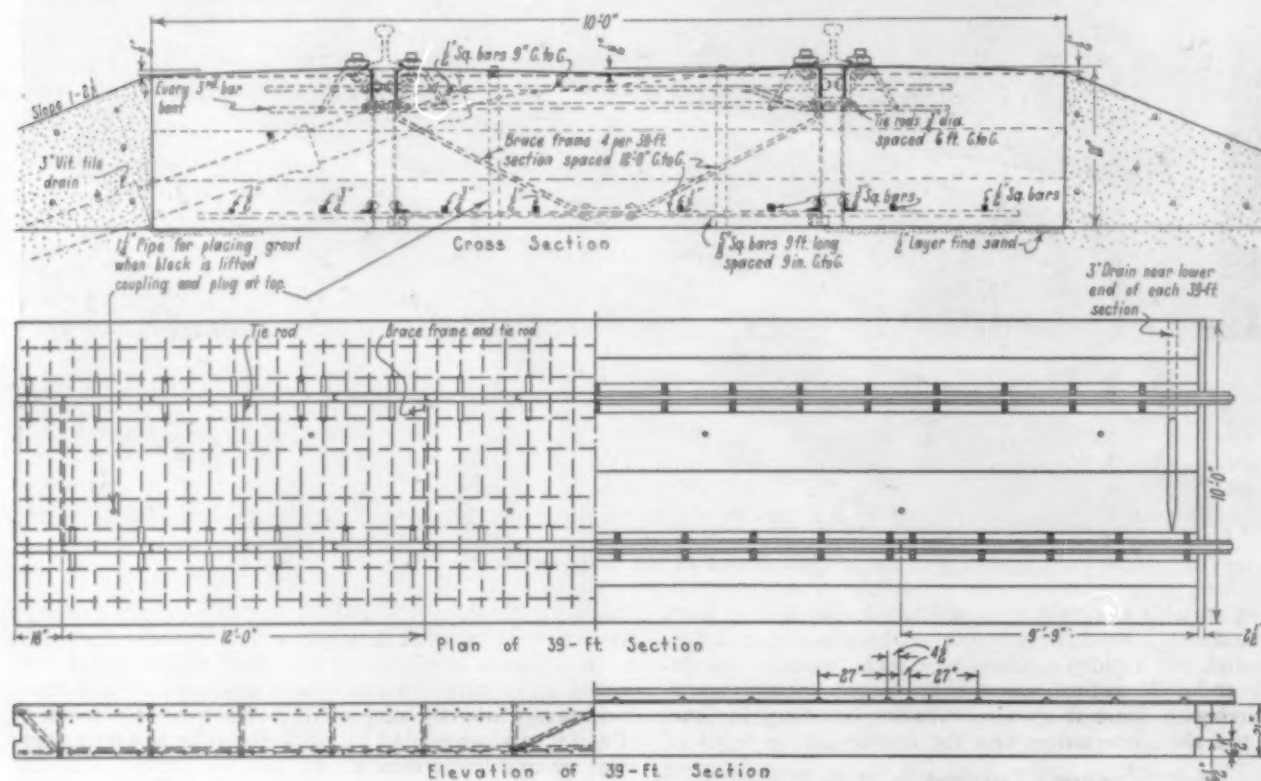
tion provided at each end of the concrete roadbed for the purpose of effecting a suitable transition from the track on the concrete roadbed to standard ballasted track. This view shows a depressed apron with two steps, the upper step affording space for two ties resting



Details of the Rail Fastening

directly on the concrete, and the lower step forming a ramp permitting of a gradually decreasing thickness of ballast underneath the ties from its outer end toward the ties laid resting down directly upon the concrete basis.

This installation of concrete roadbed construction is



General Plan of the Concrete Roadbed Construction

upper ends were inserted in the slab at intervals of 6 1/2 ft. longitudinally, and 15 in. alternately on each side of the longitudinal center line. These pipes serve as a means of forcing grout or sand underneath the slab in case it is necessary to jack them up to compensate for inequalities in surface.

One of the photographs shows the special construc-

an experimental one and while its length, 1/4 mile, is deemed sufficient to afford opportunity for a thorough service test, the volume of concrete involved is only 850 cu. yd. Consequently, the equipment provided for and the methods pursued in construction were those applicable to a small yardage of concrete and are in no way comparable to the plant or procedure which would be



employed in the building of any considerable mileage of this type of construction.

#### Detour Trains Around the Construction Site

The first step in the work was to release the site to the construction forces which, as previously mentioned, was readily possible in this case because of the presence of an adjacent passing track. Eastbound trains were detoured through the passing track by means of the turnout switches at each end, while the westbound track at each end of the construction district was lined over to connect with the eastbound track.

To avoid additional expense and take advantage of the solidified condition of the roadbed, the ballast was removed only to the level of the bottom of the ties. This means that the track on the concrete roadbed is 15 in. higher than the parallel eastbound track and suitable run-offs were provided in the westbound track at each end of the special construction.

It was proposed to roll the foundation for the concrete slabs prior to their construction but a trial proved that this was not practical on the gravel ballast. The rolling served to disturb rather than to compact this

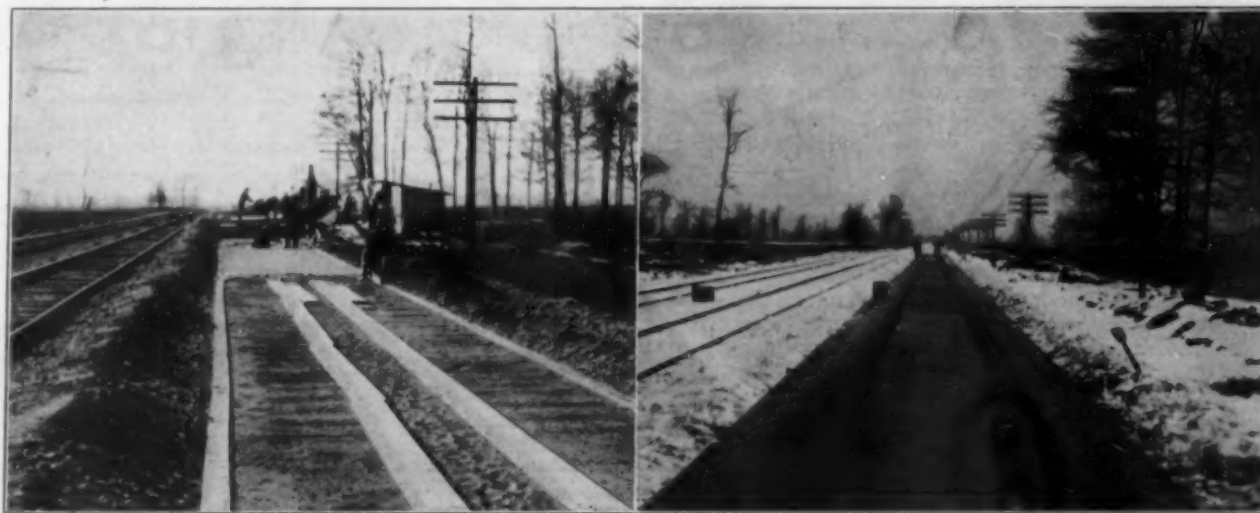
longitudinal angles were then carefully checked for alinement, gage and surface with the aid of a transit and a level to insure accurate position of the clip bolts and thereby secure correct alinement and surface of the rails.

Owing to the small yardage of concrete involved, only a relatively simple concrete plant was required. Concrete aggregates, sand and gravel pebbles, were unloaded in piles near each end of the track section and wheeled to the mixing plant which was first placed about midway of the length of the west half of the track section, and after this had been completed it was moved to a corresponding point for the east half. The concrete was delivered from the mixer to the forms in two-wheeled concrete buggies and with this arrangement the maximum haul was about 330 ft.

#### Proportion Concrete According

#### to Water-Cement Ratio

The concrete was proportioned according to the water-cement ratio to give a strength of about 4,000 lb. per sq. in. at 28 days. The consistency was such as to give a slump of from 3 to 4 in. No particular refine-



Left—Leveling and Grouting the Roadbed. Right—The Track Ready for Traffic

material. This experience, however, does not prove that rolling would not be highly desirable in cases where the concrete slab was placed on a roadbed of loam or clay soil. Because of the ineffectiveness of rolling, the top of the roadbed was brought to a uniform surface with a strike board and covered with a  $\frac{3}{4}$ -in. thickness of a stiff cement-sand mortar. This afforded a smooth and fairly impervious surface for the application of the concrete and by covering this mortar surface with a layer of sand, it provided a plane of separation between the slab and the roadbed which it is believed would be of advantage in case it should be found necessary to jack up the slabs to compensate for settlement.

#### Build Concrete Roadbed in 39-ft. Units

All of the work was carried out in units corresponding to the 39-ft. slab length and the preparation of the roadbed surface was followed in turn by placing the reinforcement. The two longitudinal trusses and cross frames were fabricated in a structural steel shop ready to be connected up in the field. After the reinforcement for a slab had been entirely assembled, a 3-in. by 3-in. angle iron was bolted to the hold-down stirrups over each truss by means of the clip bolts. These

ment was introduced in carrying out these requirements—deviations in the consistency due to variations in the grading of the aggregate being corrected by adjustments in the proportions of the fine or of the coarse aggregates.

#### Irregularities Removed

The top of the concrete was floated to a good working finish but the two rail bearings were carefully trowelled to an accurate surface, minor irregularities being removed by rubbing with carborundum bricks. The concrete was cured by keeping it covered with a blanket of moist sand about  $1\frac{1}{2}$  in. thick for at least seven days after placing the concrete.

The test track was placed in service on December 19, or three weeks after the last concrete had been placed. Initial movements over it were at low speed under a slow order which is being modified from time to time to the end that all speed restrictions will be removed in a short time. The behavior of this track is being carefully watched through the agency of systematic inspections. The design was developed by Mr. Alfred with the assistance of Mr. Chipman who had direct charge of the construction.

## Car Loading for Year, 53,309,644

WASHINGTON, D. C.

**R**EVENUE freight car loading for the fifty-two weeks ended December 25 totalled 53,309,644 cars, as compared with 51,224,152 cars in the corresponding period of 1925 and 48,534,433 cars in 1924. This was the first year in which the loading has attained an average of over a million cars a week. During the year there were 27 weeks in which the loading was over a million cars.

For the week ended December 25 the loading showed the usual seasonal decline, a total of 772,590 cars, an increase of 71,529 cars as compared with the corresponding week of 1925 and of 125,266 cars as compared with 1924, the Southwestern district being the only one to show a reduction as compared with 1925. Increases were also shown in all classes of commodities except livestock, coke and ore. For the week ended December 18 the total loading was 950,575, as compared with 969,738 in the corresponding week of 1925 and 900,654 in 1924. The summaries, as compiled by the Car Service Division of the American Railway Association, for the week ended December 25 and that ended December 18, are as follows:

### REVENUE FREIGHT CAR LOADING Week Ended Saturday, December 25, 1926

Districts	1926	1925	1924
Eastern	181,611	162,528	153,346
Allegheny	167,353	147,595	136,848
Pocahontas	39,325	31,429	23,389
Southern	118,245	106,883	98,300
Northwestern	87,471	80,579	78,157
Central Western	116,964	109,218	108,015
Southwestern	61,621	62,829	49,269
Total Western Districts	266,056	252,626	235,441
Total All Roads	772,590	701,061	647,324
Commodities			
Grain and Grain Products	39,613	33,351	33,462
Live Stock	22,453	22,697	25,228
Coal	179,195	122,380	129,725
Coke	11,054	14,702	11,418
Forest Products	47,820	45,853	40,309
Ore	8,696	10,206	6,879
Mdse. L. C. L.	210,723	200,608	190,868
Miscellaneous	253,036	251,264	209,434
December 25	772,590	701,061	647,324
December 18	950,575	969,738	900,654
December 11	998,715	1,008,696	957,424
December 4	1,058,151	1,020,839	969,485
November 27	942,792	923,206	879,131
Cumulative total, 52 weeks	53,309,644	51,224,152	48,534,433

Revenue freight car loading in the week ended December 18 amounted to 950,575 cars, a decrease of 19,163 cars as compared with the correspond-

### REVENUE FREIGHT CAR LOADING Week Ended Saturday, December 18, 1926

Districts	1926	1925	1924
Eastern	220,819	214,816	207,992
Allegheny	197,189	196,151	184,256
Pocahontas	57,862	56,591	47,810
Southern	155,187	160,394	152,421
Northwestern	100,097	114,503	101,913
Central Western	141,443	145,244	137,489
Southwestern	77,978	82,039	68,773
Total Western Districts	319,518	341,786	308,175
Total all roads	950,575	969,738	900,654
Commodities			
Grain and grain products	47,451	54,043	47,183
Live stock	30,237	34,420	36,226
Coal	230,753	187,271	190,847
Coke	11,848	16,438	11,872
Forest products	58,386	69,536	67,414
Ore	8,899	11,280	10,175
Mdse. L. C. L.	251,591	253,003	239,589
Miscellaneous	311,410	343,747	297,348
December 18	950,575	969,738	900,654
December 11	998,715	1,008,696	957,424
December 4	1,058,151	1,020,839	969,485
November 27	942,792	923,206	879,131
November 20	1,078,812	1,057,923	1,010,919
Cumulative total, 50 weeks	52,537,054	50,523,091	47,887,109

ing week of 1925 but an increase of 49,921 cars as compared with 1924. Decreases as compared with the corresponding week of last year were shown in all districts

except the Eastern, Allegheny and Pocahontas, and in all commodity classifications except coal, which showed an increase of 43,482 cars. The summary, as compiled by the Car Service Division of the American Railway Association is tabulated in the first column on this page.

The freight car surplus for the week December 8 to December 14 average 180,140 cars and for the period ended December 22 it averaged 197,754 cars. This included 130,982 box cars and 27,651 coal cars. The Canadian roads for the week ended December 27 had a surplus of 12,408 cars, including 10,550 box cars.

### Car Loading in Canada

Owing largely to the Christmas holiday revenue car loadings at stations in Canada for the week ended December 25 showed a decrease of 9,747 cars from the previous week, but, compared with the same week last year, there was an increase reported of 7,185 more cars loaded.

Commodities	Total for Canada			Cumulative Totals to Date	
	Dec. 25, 1926	Dec. 18, 1926	Dec. 26, 1925	1926	1925
Grain and grain products	10,526	10,894	9,356	503,316	502,237
Live stock	1,239	2,288	1,103	116,438	125,210
Coal	8,384	9,952	5,421	328,558	235,034
Coke	468	422	396	19,634	16,101
Lumber	2,366	2,899	2,483	182,244	179,882
Pulpwood	2,143	2,094	1,952	126,330	123,268
Pulp and paper	1,849	2,353	2,096	120,307	106,217
Other forest products	2,284	2,684	2,035	155,886	142,463
Ore	1,312	1,324	1,385	88,689	72,811
Merchandise, L. C. L.	13,699	16,611	11,891	839,730	782,662
Miscellaneous	9,573	12,069	8,540	728,564	660,291
Total cars loaded	53,843	63,590	46,658	3,209,796	2,946,176
Total cars received from connections	34,563	36,900	30,620	1,911,848	1,693,864



A Freight Train on the Tauern Line, Austria



# Panaceas and Possibilities

## *Place and value of Watson-Parker railroad labor bill—Underlying philosophy of worker-employer relations*

By Hayes Robbins

UPON the heels of the first railroad wage arbitration under the new federal machinery for the purpose comes a proposal from the labor side, to amend the law. The particular question now raised, having to do with "regional" adjustment boards, means much that is vital, within railroad circles. The public, less familiar with the technicalities but concerned about the situation as a whole, will take note of the fact that, so soon, some change in the new plan is desired. But it is not in the labor household alone that "something different" is, *now as always*, preferred.

An operating official of a railroad in eastern territory remarked in private conversation, recently:

"Some of us begin to wish we had the Railroad Labor Board back."

He was asked the reason for his present frame of mind. The Watson-Parker law, to facilitate voluntary settlements of labor disputes, which replaced the Railroad Labor Board last spring, had been in operation only a few months. His road had been one of that considerable majority which had joined with the sixteen labor union organizations in favoring the new plan, although it is no secret that in the official families of many of the roads there were decided differences of individual opinion about the wisdom of the change. His reply had the sound of expectation come true:

"It looks as if the organizations would manage to keep us before this new Mediation Board half the time. They will either have new demands or revive issues they couldn't win under the old scheme. The new board can't always be expected to know what cases are really important. Some of them will be worked up merely to boost the stock of the leaders with their own following. And if the board can't get us together on some kind of a settlement it is supposed to recommend arbitration."

"But arbitration is what you all professed to stand for?"

"Yes, if it comes to that or a tie-up. Some things ought to be fought out, but the public won't stand for it. But it will be expensive business if we have to arbitrate local matters that have been magnified to look like real issues. The public doesn't know the difference and never will." Such a reply might have been expected by anyone watching the new experiment from the side lines. The point of view is quite different, as a rule, when one is not obliged to shoulder the responsibility of dealing day-by-day with that most unpredictable of all factors in industry—the human equation. Such an observer can afford to be philosophical and take the long range view. The other man must answer for every move as he goes along, to his superiors, and they to the stockholders and the public. But there are several obvious "slants" which may be suggested, nevertheless, upon all that the apprehensive official had to say.

One is that many of the leading executives apparently prefer to wait a bit before passing judgment. If they have their forebodings they have the reasonable hope also that time will fortify the new board with the ex-

perience and the judgment to discriminate between the trivial and the serious and to be governed accordingly.

### Too Much Expected of New Law

Another, true of every new scheme for dealing with an age-old problem, is that too much was expected of it. It was widely disclaimed, indeed, as a "panacea" for labor disputes, but in the prospect of escape from difficulties which had steadily grown under the former plan it was entirely natural that possible complications of the new, still in the distance, should be overlooked or minimized. They are greeted, therefore, with something of impatient surprise when they promptly put in their appearance, as they were bound to do.

We are facing nothing disconcerting, for instance, if a new government board finds at once a long line of bidders for attention, on its doorstep. This was one of the commonest complaints under the operation of the Railroad Labor Board, especially in its first years. The docket was crowded with hundreds of cases which by no stretch of the imagination could be regarded as of serious public concern or threatening an interruption of traffic. Special assistants to operating executives, sometimes the executives themselves, found it necessary to spend a substantial part of their time preparing cases for trial and journeying to Chicago, not uncommonly to face postponements and long delays.

Managements have never been exempt from this difficulty, to greater or less extent, under any governmental plan for labor adjustments. If they permit it to become serious under the present scheme, however, the responsibility is likely to be chiefly their own. The mediation now provided is a tender of good offices and not a judicial summons. No quasi-authoritative court is empowered to bring contestants before it involuntarily, and to render "decisions." No management is placed in the dilemma of "defying the Government" if it elects to take the stand that a given issue involves no public interest or possibility of interrupted traffic and, therefore, that intervention is not necessary.

### Not Through Experimenting

The obligation is laid upon managements and employees alike to settle differences within their own households, through joint adjustment boards to be set up for the purpose. On some railroads such boards have been functioning in certain departments for several years, and thus far without deadlock or appeal. They may or may not be established generally under the new law, but it is perhaps too early to assume that in their absence the Mediation Board will permit itself to become the dumping ground of inconsequential issues or a tool of the "poker players" on either side. At any rate, to demonstrate that it must and will fall to this level is to prove a like probable weakness in any political refereeship or intervention we are ever likely to devise for the control of employment relations.

Whatever the outcome, it is a safe venture that we are

not through experimenting with the subject. When the present plan falls short of high expectations we shall obey a familiar national instinct if we conclude that after all something based on the opposite theory probably contains the ultimate solution. There is something challenging, to say the least, in our faith in "ultimate solutions."

In the years immediately following the world war a considerable drift of public sentiment favored compulsory measures for the assuring of industrial peace. With our attention on the master emergency we accepted with little question a close governmental regulation of industry, as a military necessity. While strikes did not disappear, there were many who hoped and urged that the control attempted in time of war should be made permanent policy for the years of peace to come. The Railroad Labor Board, created by the Transportation Act of 1920, was given a somewhat ambiguous authority to hear and "decide" issues coming before it. No means of enforcement were included, but a determined effort was made to give the board's nominal authority the effect of reality, on the theory that Congress presumably intended its judgments to have the force of law. The Supreme Court held to the contrary, but at all events the board represented the longest step towards compulsory labor adjustments that had been attempted in peace-time Federal legislation. Most, but not all, of the railroad managements accepted it on that basis and pursued a policy of strict compliance. Most of the labor organizations complied with orders and decisions for the time being, with notable exceptions, although increasingly hostile to the principle and with various attacks in the courts upon the scope of the board's authority.

#### The Kansas Experiment

The Kansas Court of Industrial Relations, of the same era, was hailed far and wide as the long sought panacea. It had brought labor relations at last under enforceable process in all industries "affected with a public interest." That "the rights of the public are paramount" to the individual freedom of either workman or employer was discussed as a self-evident and universal truism, with little attempt to analyze or set any limits to so sweeping a generality. But there were those, Secretary Hoover among them, by no means condoners of labor excesses, who saw clearly that penalties upon the right to strike could only assure the end in view—uninterrupted industry—if and as they compelled some men, few or many, to remain at work against their will. Payment of fines or serving of jail sentences would serve no public purpose unless they actually held men to their jobs.

If this were true the proposition meant in effect to re-establish the principle of involuntary servitude of the individual, this time on behalf of the "paramount" convenience or urgent need of the mass. To just what ends might this tremendous weapon in the hands of majorities over minorities force us?

Governor Allen and Mr. Gompers in a famous debate battled the issue of the hour. By the test of newspaper comment the labor leader came off second best in the academic argument, but as an industrial prophet it appears that his was the clearer foresight. Most of the "teeth" have been withdrawn from the Kansas law, and the latest Supreme Court decision restores none of them, as affecting trade disputes. None of the attempts to duplicate this plan in other states has succeeded. "Government by injunction," while still a check upon violence, is no longer seen as a road to decisive control of the labor movement. Finally, the Railroad Labor Board itself gives way to a mechanism for voluntary adjustments and arbitration.

#### Why the Labor Board Failed

But at first there had been compliance, ostensibly, with decisions and rulings. What happened? We did not see the underlying currents set in motion. Almost immediately the official agency which attempts of its own authority to determine conditions of employment is held responsible for all the results of economic forces not of its making and wholly beyond its control. It becomes the nearest object of resentment, the shining target of accumulating dissatisfaction, first in one quarter, then in another. Dealing with one of the most jealously guarded of human rights—freedom of choice in the pursuit of a living—it is attempting control in a field to which men have never willingly admitted it, and almost inevitably it is swept away in the next turn of the social and political tides.

What is the significance of this? That all legislative dealing with industrial relations is futile?

Let it be suggested that all depends upon its character. If it helps to replace friction and waste with order and system in the free relations of workers and employers with each other, it is one thing. If its effect is to change the normal balance of power, or if it attempts an industrial government without the consent of the governed, or collides with the economic laws of wages, it is quite another.

#### Possibilities of Government Boards

A government board cannot change the general drift of rising or falling prices and wages, in times of business expansion or depression, nor ward off the effects on labor and employer relations. It has nevertheless, in common with other agencies of like intent, perhaps the one available opportunity of practical service. Wisely planned and directed with understanding, it should be able by degrees through many contacts and facilities to shape the labor readjustment process from a running battle into something of an orderly march of events.

The means of furthering this end have little of the spectacular about them, and are commonly underrated. In important industries they have been utilized for long periods as a matter of course, steadily reducing the motives and the probability of conflict, but nowhere do they "guarantee" peace. They are based upon the principle of guidance rather than of control, but their own possibilities of constructive, educative influence have never been broadly developed.

A public agency dealing with industrial relations from this angle can make much or little of its opportunities, according to its judgment and capacity. It can assist in bringing the facts to light, in focussing public opinion, in providing convenient means of clarifying the issues, eliminating non-essentials, discouraging hasty action and studying all possible solutions before relations are actually broken. If it goes farther and provides a systematic machinery for arbitration as the final step, it may clear the way to a still larger proportion of settlements without open conflict. Decisions of an arbitration board are no more welcome to the losers, indeed, than are those of an industrial court, but there is a vast difference between the psychology and social consequences of authority imposed from without, upon the normal liberties of men, and of that voluntarily accepted from within.

In the transportation field, the Watson-Parker law is framed upon this general conception. In some respects it is loosely drawn and ambiguous. That it will develop faults in working detail may be taken for granted, and it is equally certain that those who expect of it an era of perfect peace and understanding are foredoomed to disappointment. The undoubted fact that "When everybody gets tired of the scheme we shall scrap it and try



something else" does not necessarily discredit it for its possible term of usefulness. If in its day and place it reasonably promotes its objects we shall get out of it all that we customarily derive from our political experiments. The three parties at interest can utilize its facilities to the common good if they will, and it is not impossible to strengthen it at weak points as they appear.

### Removing "Sand from the Bearings"

But our shifting political experiments with this problem are not the whole story. They are in the foreground, but in late years a fact of larger significance has been emerging in the background. We are beginning to get our attention in earnest upon the other end of the problem—the possibilities within industry itself of constructive dealing with the underlying human relationships whence, besides our blessings, most of our preventable troubles flow.

Wage adjustment machinery has its necessary part to play, but the major wage issues arise only at considerable intervals. Their adjustment is costly; if all the facts could be known it might appear that they are actually less costly than the grand aggregate of maladjustments in the day-by-day operating routine. Some of these may lie beyond our reach; to contend that most of them do is a confession of incapacity to cope with the human fundamentals which are to hold, more and more, the balance of success or failure in the industry of the future.

The steady procession of expensive misunderstandings chargeable to impatience, temper, stubbornness or lack of information, the personal grievances, evasions of agreements, the wasted effort of misplaced workmen and misplaced bosses, the wits-matching of well-known types of supervisors and committee leaders who have reason to distrust each other, the job-rate contentions, minor claims, rule interpretations, rule infractions and the resulting discipline,—each with its train of controversy, hearings and appeals, leading sometimes to deadlocks of serious import—are in the total and at all times a dragging brake on the full productive possibilities of industry. Fortunately they are not characteristic of the whole labor relationship by any means, but it is safe to say that the revelation would be surprising if we could know in full how costly a part they play and the breeding places they offer for issues of still larger scope.

Morale suffers less from the occasional big jolt than from the sand in the bearings of every-day operation. What does this mean? Only what is true in every highway and byway of successful business, that management has the responsibility of looking to causes of difficulty—the aftermath may defy remedy or control. In many large industries the responsibility has been seen and has led to some interesting developments. Recognition of it in the railroad field has gained ground materially since the end of Federal control, in a practical way, but with ample opportunity still ahead.

### Remedial Measures

There is an increasing attention, for instance, to the training of foremen and minor supervisors, not alone in technical proficiency but in sound principles of handling men and developing their capacities. Here is the first-line contact of management with the rank-and-file, to a large extent the originating point of the indifference and friction, or the responsive and interested co-operation, which are reflected in the whole working relationship. Closely allied are the provisions for apprentice instruction, for systematic occupational study and for more advanced technical training. These are by no means general as yet. So far as they exist they are doors

toward opportunity, and there are those in every occupation whose habit of mind and industrial attitude are warped by the lack of outlets to latent capacity.

The regularity or irregularity of employment again touches labor at a vital spot, coloring its own sense of responsibility, whether to industry or to the public. Uncertainty of livelihood of considerable numbers of men necessary to an industry is an always demoralizing influence, and one of the familiar sources of lowered morale. This is a particularly hard problem in railroading, but studies and experiments are under way in some quarters to discover what can be done towards stabilization. There are other direct concerns of the wage-earner, with a bearing on the interest his employment holds for him. One of them is a working environment as safe and as decent as the job will permit. Others are the opportunity for economical insurance against the major hazards, facilities for savings and for obtaining money credit in emergencies, and the placing of pension systems upon a sound and permanent basis. Employees on certain railroads in particular have shown an active interest in this latter subject in the last two or three years, and have pressed for the opportunity to augment pension benefits by contributions of their own.

### Problem Centers About Wages

But none of these things, nor all of them, will stop the ever-returning wage issue. Assuredly not. They are palpably worth while on their own merits or not at all. Industry may open doors of individual opportunity, it may humanize the working environment and grade up the supervision, it may get at many of the hidden sources of serious trouble, but it will still remain true that the prime concern of the worker, in the mass, centers in his wages. And here the immediate interests of management\* and men stand opposed. They may find agreement more and more frequently, as the rule of reason gains ground, but in any given situation there remains always the possibility of breaking apart.

If there is no more an escape from this "penalty of liberty" in industry than in politics or religion, at least it is not peculiar to labor and employer relations. We have it all the way from the contentions of buyer and seller in the corner market to the refusals of business firms to renew contracts and the collisions of financial and commercial interests in world-wide competition. Perhaps it is the price of a free industrial society, as military autocracy may be the price of enforced industrial peace.

### A Fundamental Common Interest

In the face of this, industry does somehow hold together against the strain. That it could do so for some centuries of the worker-employer relationship at its blundering worst, its tolerable better and occasional best is indeed a social-economic "poser" unless there is somewhere, underlying the surface ructions, a real and substantial community of interest. The idea is a favorite theme of radical jest, as a pleasing sentiment. If it is that only, we have a sorry outlook.

Is there a fundamental common interest? We are less concerned with the ideal basis of future society than we are with a sound working principle for our own time and place. One of the truisms of everyday business is that no industry can be made to yield high wages, improved conditions and a fair profit—all three—without high earnings, and that high earnings under normal competitive conditions are seldom realized without united effort of all the productive factors. Platitude or no platitude,

\*Management herein is used as a general term for both itself and the capital-ownership interest in industry.



there is community of interest in the fact at least that the productive power upon which employment and wages at desired standards can be maintained depends in the long run, even in "bonanza" industries, upon steadily efficient co-operation. The uniting incentives are primary, the dividing are secondary, and the one fact is as "real and substantial" as the other.

#### Investing Job With Human Interest

But the real problem is how to break through the smoke screen of wage battles and minor contention and bring this larger interest into the open. Can it be made a clear and continuing force, understood and applied, in the employment relationship? Is it possible to enlarge that relationship beyond the range of the pay envelope and the incidental advantages and opportunities of the job? For the rewards of industry to the worker are not wholly in these basic things. If they are the foundation, there should be room to build upon it. We are only beginning to see in its possible significance the relation of the man not alone to the job but to the whole enterprise of which he is a living part. The particular job is frequently a sub-divided thing of deadly monotony. To a large extent it may be transformed when invested with human interest, through new and broadening associations built around it, through convincing evidence that something more is recognized in the man than a producing machine.

Whether this leads directly to any of the "industrial democracy" or "voice in the management" schemes is not of immediate consequence. It is one thing to invent a model mechanism and quite another to breathe into it the breath of life.

Executives with an eye not merely upon the moment but upon the future outworking of our whole industrial problem will see at least the possibilities next ahead. They will recognize that men in the mass cannot comprehend the corporate "employer," seen as a vast and remote aggregate of officialdom, stocks, bonds, plant and equipment; that it must be personified to be understood, much more to win human interest and adherence, for men do not know how to "co-operate" with an abstraction.

Executives who have no time will take the time nevertheless to make themselves known and heard, and if they draw fire they will at least gain a new contact. They will provide opportunities through group conferences for wider personal acquaintance in "cross sections" of the industry, and for better understanding of its problems

and needs, not omitting its relations and obligations to the community. They will extend the means of communication and information beyond these contacts—it is actually possible to use the printed word without hokum or propaganda, in spite of ample "house organ" evidence to the contrary! They will create new incentives, perhaps through suggestion systems, opportunities to help in obtaining new business or, with due safeguards, to invest in securities of the company. They will have a particular care about the human understanding of those who supervise the work of others.

#### The Next Step

*They will see, in brief, that the next objective in industrial relations is something quite beyond rules and schedules and meeting grievance committees; nothing less than the all-round participation of informed and intelligent men with a share and a sense of responsibility to the enterprise in which their own welfare is staked and, through it, to the public it serves.*

If that is a commonplace objective, to the social idealist, it may nevertheless be the next rise on his line of march. It will prove a sufficiently difficult level to reach and we shall hardly reach all of it at once. From it we shall perhaps get new and more comprehensive bearings. We shall have written no philosophy of social reconstruction but we may have the raw material for another chapter.

It will make a heavy draft on management capacity and employee confidence to go on, as men and executives must, with the heat and burden of routine and the strain of many differences and at the same time build such a program as this into normal practice. We are making a start, nevertheless. It cannot be done as a paternalistic "handdown." It will demand the ideas, the criticisms, the active sharing of all the human factors in whatever is to have any permanent value. There need be no expectation that it will "head off" wage demands or undermine labor unions or silence radical agitation. Its justification in the period next ahead, to industry and to the public, is that it tends to narrow the area of controversy and to broaden that of efficient service and productive stability. How far this will carry us it would be immensely interesting to know, but the important thing is to be heading in the right direction.

With a declining faith in panaceas for the differences that are inevitable, we are not left without resources on the other side of the problem. Their possibilities are still to be developed.



B. & O. "Capitol Limited" at N. K. P. Crossing, Stoney Island, Chicago

# Great Northern Concludes Extensive Signaling Program

*Installation on 2,998 miles includes latest type of equipment—Saving made by unique automatic interlockings*

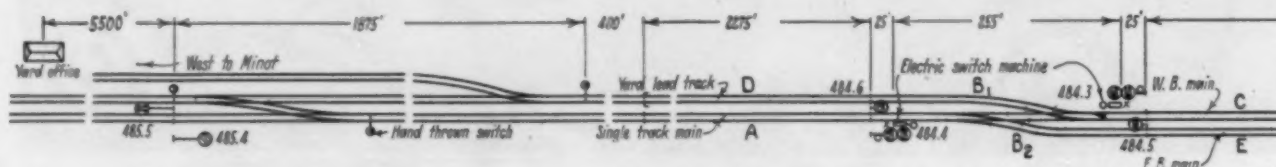


*Automatic Interlocking Including Switch at End of Double Track, Minot, N. D.*

ONE of the outstanding incidents of 1926, from a signaling viewpoint, was the completion of the extensive signaling program of the Great Northern, the last section of about 272 miles, from Lurgan, Minn., to Minot, N. D., being completed in August. This road has been carrying on a signal construction program actively for several years until the main line is now entirely equipped with automatic signals from St. Paul, Minn., to the Pacific Coast, 1,794 miles of continuous signaling without a gap. Other main line mileage

having been placed in service on 1,243 miles of line during the last four years.

Following the organization of a signal department, the three-position upper-quadrant signal was adopted as standard in 1905. After an investigation of traffic conditions on different parts of the road it was decided to first install signals on the lines handling heavy ore traffic from the iron mines to the docks at Superior, Wis. Therefore, in 1907, 4 miles of single and 52 miles of double track between Allouez, Minn., and Arlberg were



**Track and Signal Plan of Automatic Interlocking at End of Double Track, East of Minot, N. D.**

equipped with automatic signals brings the total on the road up to 2,998.5 miles, this amount been exceeded in road miles by only one railway in the United States, i.e., the Southern Pacific.

## Early Installation Gives Convincing Results

One of the principal factors contributing to this continued program was the fact that the Great Northern has never killed or injured a passenger or an employee in a collision between trains in the mileage equipped with the automatic block signal system. A characteristic of this extensive signaling layout is the fact that the vast majority of the apparatus is of modern equipment that has been installed in the last few years, light signals

equipped with automatic signals, constituting the first installation on the railroad. In the same year signals were installed on the 10-mile four-track line between St. Paul, Minn., and Minneapolis.

The next move, in 1908 and 1910, was to install a staff system with signals for the protection of train movements over the Cascade mountains, totaling 72.4 miles. Other installations of a similar nature followed in 1913. The heaviest passenger traffic on the railroad at that time was perhaps along the Pacific Coast line from Seattle, Wash., to Vancouver, B. C. Therefore, portions of this line were equipped with signals in 1910 and 1913.

A glance at the map will show that the division of 120



miles of single track from Minot, N. D., to Williston is a neck of the bottle for lines east and west of this stretch. On this section train movements were being directed by time table, train orders and manual block signals. All trains were required to clear passenger trains at least 20 minutes. Following train movements were permitted when the block to the next station was clear, the block stations being from 5 to 10 miles or more apart. The average train movements over this division in 1912 included four passenger and eight freight trains each way every 24 hours. Since this territory is in rolling country with numerous grades it was decided that signals would be of the greatest help here first in increasing the track capacity; therefore three-position upper-quadrant signals were installed in 1913.

From this time up to 1923, signal construction activities were confined to equipping short stretches of line at different points in mountainous territory, principally between Spokane, Wash., and the eastern slope of the Rocky mountains at Blackfoot, Mont. During this same period the automatic signal system was substituted for the staff system in the Cascade mountains, thereby securing more complete protection at a reduced operating expense. The saving in this case was approximately \$50,000 a year.

#### Light Signals Adopted for Standard on Large Mileage

Beginning with 1923, the developments in the science of optics made the more general use of the colored light signal possible and the outstanding advantages of this new type of signal over the semaphore led to its adoption as standard on the road. A summary of the advantages leading to this conclusion, as presented by officers of the Great Northern are as follows: This signal affords great simplicity and reliability of indication, there being no rotary or moving parts subject to derangement in operation or to freezing in the "clear" position. At night railway signals of necessity are displayed by lights

man in the engine cab. These colored light signals were installed on 410 miles of line in 1923. Additional signals installed during 1924-25-26 make a total of 1,242.3 miles of such signals now in use on the Great Northern.

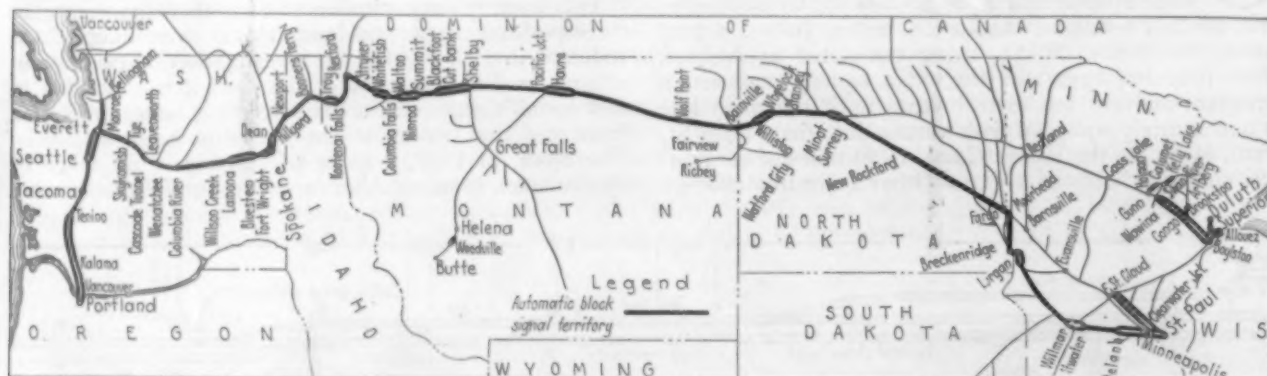
#### Standards Facilitate Observation by Engineman

The signaling system used by the Great Northern is the standard system used on American railways and is



Remote Control Electric Interlocking, Summit, Mont.

uniform in its application to the several operating divisions so that there is no doubt or confusion in the minds of enginemen or trainmen who may be transferred from one division to another. If it were possible for one man to operate a locomotive from the terminal at St. Paul to the terminal at Seattle, the automatic block and interlocking signals without exception would be found located to the right of and adjacent to the track governed for the entire distance. All of these signals are pro-



Map of Great Northern Showing Automatic Signal Mileage and Location of Several Important Interlocking Plants

and it is consistent to use the same colors by day, now that it is feasible to do so. This produces uniformity of signals for the guidance of enginemen and trainmen throughout the 24 hours of the day. The colored light signal has the further advantage over the semaphore of greater average visibility. This is particularly important during the hours of darkness, also during the twilight zone preceding sunrise and following sunset, and in the presence of smoke, or in foggy weather. The colored light signal has excellent penetrability and when most needed is at its best, contributing much to the safety of train operation. For clearance reasons the semaphore signal is mounted on a high mast while the colored light signal is mounted on a low mast which brings it more directly into the line of vision of the

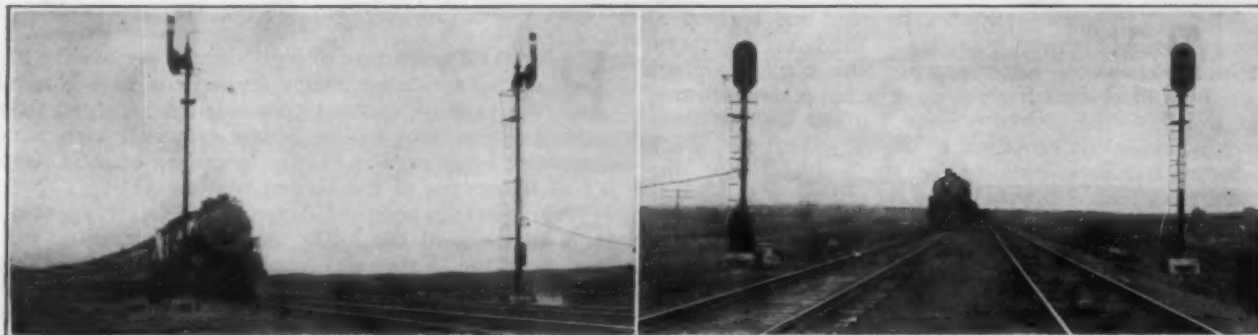
provided with electric lamps of the approach lighting system.

The current required for signal operation and lights is taken from eight-volt storage batteries. Where practicable these batteries are charged by rectifiers operated by a-c. current from local power sources. At other places the storage batteries are charged by banks of 14 primary cells, the average life of which is 10 months for a semaphore signal and 8 months for a light signal. A special effort is made to provide the power taps and rectifiers for signals near stations where the trains occupy the main tracks for considerable periods of time. The average cost of current where the a-c. floating system is used is \$1.20 per year per light signal. At Ft. Buford, Mont., where a-c. current was not available, a



unique wind machine generator is used to supply a-c. power to operate the signals on 20 miles of line. Where semaphore signals are operated directly from a battery of 16 cells of primary battery without a storage battery intervening the primary battery has an average life of 11 months. The track circuits average one-half mile in

switches electrically under the control of the nearest operator has been installed at a number of points on this road to eliminate train stops. For example, at Shelby, Mont., the switch for the end of double track, a junction switch and the two ends of a cross-over, together with proper signals, are all controlled from a desk lever ma-



Since 1923 Color-light Signals Have Been Installed Rather Than Semaphores

length, each being operated by three cells of primary battery which have an average life of six months.

#### Type of Equipment Used

The semaphore signals are almost all General Railway Signal Company Model-2A top-post mechanism and the light signals installed up to December, 1925, are of the same manufacture. Those installed in 1923 and 1924 use the doublet lens combination with the 8-volt, 10-watt lamp, while those installed in 1925 have the Lebbly mirror reflector using the 8-volt, 5-watt lamp. The

chine on the operator's table in the station. Similar layouts near Havre, Mont., Surrey, N. D., and Summit, Mont., are controlled in the same way.

The Great Northern has been the pioneer road in developing the automatic interlocking system for the protection for railroad grade crossings by which the signals are controlled by the trains automatically. Route and approach locking is provided in all such installations. The first plant of this type was installed in 1914, meeting with such success that a total of 32 automatic and semi-automatic interlocking plants are now in service on the



Cantilever Bridge Brings  
Signal at Right Side  
Along Yard

Typical Single Track Color-light Signal Location,  
Minot, N. D.

Home Signal on Northern  
Pacific at Automatic Inter-  
locking of Crossing

signals installed in 1926 are the Chicago Railway Signal & Supply Co. chromatic type with the ground clear lens, also using an 8-volt, 5-watt lamp.

The Great Northern has, since 1905, carried on an active program of construction to provide interlocking plants at terminals, junctions and crossings with the idea of eliminating train stops wherever possible. Without exception the railroad crossings on the principal main line from St. Paul to Seattle are now protected by interlockings. As an example, the 1926 program included one 64-lever electric plant at St. Anthony Park, one 16-lever electro-mechanical plant and eight installations of the automatic interlocking system.

The remote control system of operating outlying

road. Of the eight automatic plants installed in 1926, four replaced mechanical plants with a net annual saving of about \$6,000 for operating expenses on each plant.

Perhaps the first automatic interlocking, including the control of switches on a steam road, was installed at Breckenridge, Minn., in 1924. This layout includes electric signal protection and switch machines on two switches, one at the end of double track and the other at a lead into the yard. The operation of the switch at the end of double track is normally automatic, the switch lining up automatically for the route of an approaching train. Route locking, automatic time releases, etc., are provided to afford safe and practical operation for the various train movements involved. The operation of the

switches may also be controlled by push buttons. The movement of these switches is controlled automatically by approaching trains with electric route locking similar to the methods employed in a manually controlled interlocking plant. An automatic interlocking at a similar layout was installed at Minot, N. D., in 1926, photographs and track diagrams being shown herewith.

The use of spring switches in main-line high-speed tracks has not received approval on the Great Northern, it being considered better practice to use a low-voltage remote control switch machine which not only throws the switch to the desired position but also locks it there and indicates this condition by signal indication. Such a layout has been installed for the westbound passing track at Minot, N. D. When the dispatcher is ready for a waiting train to leave this passing track he pushes a button in his office, the remainder of the operations being automatic. If the route is clear, the switch operates and the signal follows automatically. When the

dent and the general managers of the lines East and West, an average monthly signal performance report being shown in a table herewith.

## Consolidation Legislation Urged

WASHINGTON, D. C.

PROMPT enactment of legislation to remove the obstacles which for nearly seven years have blocked the path of railroad consolidation is urged in a communication sent to the Senate interstate commerce committee by John W. O'Leary, president of the Chamber of Commerce of the United States.

"It is generally accepted," says Mr. O'Leary, speaking for a majority of the 1,400 business organizations embraced in the National Chamber's membership, "that some degree of consolidation is desirable. Serious obstacles which have been encountered under the present law are outlined in the attached statement.

"The National Chamber believes that it is practicable to remove these obstacles by legislation and feels that this is one of the most important matters before Congress. The chamber is in favor of the major provisions of the Parker-Fess bill. I earnestly hope that the committee on interstate commerce will take action to secure the passage of this legislation during the present session."

As outlined in the statement the principal obstacles interfering with railroad consolidation are:

- "1. The transportation act directs the Interstate Commerce Commission to prepare a comprehensive plan for railroad consolidation; but thus far the commission has found it impracticable to prepare such a plan.
- "2. Under the act consolidation by the formation of a new corporation is subject to certain conditions that are different from those applicable to other forms of railroad unification.
- "3. The commission has no express authority to disapprove any proposed consolidation on the ground that it does not include a particular carrier which ought to be included in the public interest.
- "4. There is no adequate provision for federal machinery needed to effect a consolidation approved by the commission.
- "5. The transportation act makes no adequate provision for adjusting the claims of dissenting minority stockholders.
- "6. The act limits the capitalization of any consolidated company to the aggregate value of the properties consolidated, as determined by governmental authority; but this value has not yet been determined for many of the railroads of the country.
- "7. The federal and state taxes now levied on the processes of consolidation constitute an obstacle to railroad consolidation."

Provision for obviating these difficulties, it is pointed out, is made in the Parker-Fess bill. The National Chamber goes further and declares for federal incorporation of the consolidated companies. It declares, however, that "consolidation should not wait upon the enactment of federal incorporation legislation either compulsory or permissive; and that, in the absence of federal legislation, the states themselves might lead the way by enacting liberal and uniform laws removing the difficulties and costs of consolidating the existing railroad companies."

AVERAGE MONTHLY SIGNAL PERFORMANCE REPORT FOR 1926

Total number of signals (not including joint mileage).....	3,333
Stops creditable to signal system.....	72
Stops chargeable to signal maintenance:	
Track battery failure.....	1
Signal battery failure.....	3
Defective bonding or bond wires rusted.....	5
Switch instruments out of adjustment.....	1
Signal mechanism.....	2
Unsealed relays out of adjustment.....	2
Pole line.....	3
	17
Stops chargeable to track maintenance:	
Broken down insulated joints.....	2
Bond wires broken by trackmen.....	2
Poor ballast conditions.....	8
Defective switches.....	1
	13
Miscellaneous:	
Stops chargeable to defective rolling stock.....	2
Stops chargeable to uncontrollable causes.....	3
Malicious tampering.....	1
Damage by lightning.....	13
Damage by water, fire or storm.....	1
Defective material.....	14
Defective sealed relay.....	3
Stops reported, but signals found O. K.....	8
Short in metal bridge deck.....	3
	48

train clears the interlocking zone the switch returns to the normal position automatically. All operations and movements in this arrangement are surrounded by the same protection electrically as manually controlled.

During 1925 and 1926 two engine divisions in North Dakota were equipped under orders of the Interstate Commerce Commission with the Sprague system of automatic train control which system was super-imposed on the existing automatic block signal system.

It is the practice of the Great Northern to design and install the signaling system by company forces working under the superintendent of signals, reporting to the vice-president of operation. The operation and maintenance of signals is taken care of by the respective division superintendents under a divisional organization. A signal supervisor is employed on the staff of each general superintendent with one or more assistant signal supervisors on each operating division. Maintainers are provided with helpers only on the heavy districts.

The average cost for maintenance and operation per semaphore signal per year is \$37.70 for materials and \$71.92 for labor, or a total of \$109.62, while for a light signal these costs are \$30.20 for materials and \$65.35 for labor, or a total of \$95.55 per year per signal. This reduction in labor is explained by the fact that on the average a maintainer can care for 27 miles of semaphores as compared with 32 miles of light signals. The signal maintainers keep in close touch with the train dispatchers and respond promptly to any case of signal trouble which may arise. A record is kept of the signal performance, which is made the subject of a monthly report by the superintendent of signals to the vice-presi-



# I. C. C. Final Valuation Annulled

*Court holds order in Kansas City Southern case not in compliance with law*

THE Interstate Commerce Commission's final valuations of the property of the Kansas City Southern and subsidiaries were annulled and their enforcement enjoined by a decision rendered on December 31 by the federal district court for the western division of the western district of Missouri, sitting at Kansas City, Judges Stone, Reeves and Otis. The commission's orders were held invalid on the ground that it had failed to construe and apply the law correctly and had acted beyond its statutory powers and contrary to the evidence before it.

Among the points made in the decision were that the commission had declined to make allowance for recognized elements of value defined as "intangible values," that it had failed to find "original cost," and that the commission had no right to restrict its valuation to one "for rate-making purposes." This latter was also the point on which the federal court at Los Angeles had set aside the commission's first final valuation order, in the case of the Los Angeles & Salt Lake, which was argued in the Supreme Court on January 3 and 4. "The Congressional purpose," the court said, "was for an ascertainment and report on the true value of the properties of the carrier."

## The Question of Jurisdiction

The commission's final valuation order, dated March 4, 1924, fixed a final value for rate-making purposes of \$49,016,268.

The government had challenged the jurisdiction of the court to set aside its order. In discussing this question, after quoting from the valuation law, the decision says in part:

It is obvious from the foregoing that the final valuations made for and accepted by the commission are made final by order of the commission and that when thus made final they become eligible for publication and also become *prima facie* evidence. Such order had the force and effect to conclude the inquiry on the valuation project. It was contemplated by the law that there must be an end to the inquiry and that when same was reached the final conclusion upon the valuation should be stamped with an order of finality so that publication might be made and use made of such valuation as a basis for proceedings before the commission and in judicial proceedings.

Apparently the purpose of this was to furnish information to Congress and to others who might be interested and to provide a working basis for the commission in all future proceedings before that body and in certain judicial proceedings. The petitioners were seriously affected by it, as it would devolve upon them the duty, if they controverted the valuation, to overcome such *prima facie* case in proper proceedings where they might be parties in interest.

While the valuation project may be an administrative matter and may constitute merely a procedural or working basis for the commission and may not be conclusive either upon petitioners or upon the commission itself, yet it becomes a matter of such serious moment to the parties affected as to entitle them to challenge the validity of a conclusion that may hereafter confront them as a *prima facie* case. This they are doing in the instant case. If the conclusions of the commission as to the value of the properties involved were irregularly and erroneously reached, then their invalidity ought to be established so that petitioners may not be called upon to combat, with evidence, an illegal *prima facie* case.

It was the duty of the commission, acting under Congressional authorization, to comply with the directions of Congress and to present a valuation conformable to the directions of the legislative act from which it got its authority and attempted to proceed.

This does not mean that courts may be resorted to for the purpose of making such valuations nor to review and correct those made by the commission but it means that courts may be resorted to for the purpose of determining what are the duties of the commission as set forth in the statute and of enforcing action by the commission in accordance with such duties so determined.

Defendants contend that there is lack of jurisdiction because no legal damage or injury can result to plaintiff since the utmost effect of such a final valuation is a *prima facie* evidence. We think this is answered by the K. C. Southern case [252 U. S. 178], as a matter of authority. On this particular point, the situation in that case is even stronger than here presented because the valuation there was only "tentative." Also, we think the contention is wrong in principle. This valuation is not conclusive on the commission and the courts, but it certainly is intended to and it undoubtedly will affect important rights of these petitioners in a serious if not even in a vital manner. The purpose of the valuation act was not to preserve evidence which might be lost. It was to assemble facts and therefrom form and state conclusions of fact which should be readily usable as evidence. The character of the questions involved, the practical situation surrounding the controversies wherein such evidence would be useful, and the resulting necessity of creating and having readily accessible and legally usable such kind of evidence, all convince of its consequence and importance.

The immediate purpose was to furnish the commission and the courts with ready, accessible evidence of value in rate controversies. The ultimate purpose was to stabilize the valuation bases upon which the rates, as a whole, of a carrier should rest.

The above ultimate purpose will, logically and naturally, evolve from the operation and accomplishment of the above immediate purpose. The final result, desired, desirable and normally to be expected, will be the attainment of a status or measurement of value of the property of each carrier which will admit of only narrow variations as a practical proposition. We think this result is inevitable because of the character of the problem, the conditions always surrounding its determination, and the natural usage, in its solution, of the valuations made under the act.

The problem, so far as valuation is concerned, is to determine the value of a carrier at a given time, i. e. of the controversy before the commission or court. If before the commission, the inevitable tendency will be for the commission to give very great weight to its own valuation which will be introduced as *prima facie* evidence. That valuation will be the standard accepted, unless shown clearly to be erroneous, in which case, the valuation will be modified to accord to the new evidence thus, in turn, becoming ever more accurate, weighty and stable. If before the courts, the matter will necessarily arise in connection with a review of an order made by the commission; an order based on a valuation by the commission wherein the "final valuation" under the act will have had its due, if not controlling weight. As to such review, the findings of fact of the commission will not be disturbed if founded on conflicting evidence, or unless such findings are "arbitrary" and such findings would be accorded "the strength due to the judgments of a tribunal appointed by law and informed by experience." It can hardly be supposed that a finding based on such a valuation, which act makes *prima facie* evidence, will be regarded by the courts as being unsupported by evidence or "arbitrary." Also, neither the order when before a court, nor the valuation upon which it might be based could be weakened by new evidence, for the act requires the court to suspend hearing and refer such new evidence to the commission for its consideration in connection with the order, which means, of course, the valuation. The matters just stated would probably be sufficient in themselves to result in the valuations, kept up to date as required, of the commission becoming the standards of value which would be closely followed by the commission and by the courts.

There are other weighty practical considerations which would bear heavily in the same direction. The valuation of carriers has arisen and will arise before various commissions and courts having jurisdiction of controversies regarding rates. Value of a carrier property depends upon so many items and considerations and the particular view which may be taken by the individual or individuals who are endeavoring to ascertain it, that it is, at best, little more than an educated guess and in no sense capable



of mathematical solution or proof. The result has been that the value of the same carrier has been determined differently by different tribunals or even by the same tribunal at different closely related periods. The difficulty, complexity, vastness and character of the problem with the diversity of results has inevitably resulted in complete chaos. There is an utter lack of certainty, stability or harmony in such valuations. The carriers, the public, regulatory commissions and the courts are without definite standard. This state of flux, where there should be stability, is confusing to commissions and courts, is distressing to the carriers and the public and is altogether most undesirable. The valuations authorized by this act, in conjunction with the provisions for the use of them as evidence, and the constant revision of them by the commission to keep them up to date and the opportunities for correction through new evidence, offer the only realizable hope of a correction of the existing unsatisfactory condition, through the gradual acceptance and establishment of a definite value founded upon careful detailed investigation by one impartial and highly trained tribunal. That such will be the result, we cannot doubt. It is so natural and so desirable that it must follow.

### Valuations Already Being Used

The use and usefulness of these valuations and the elements of, them is already evident. The commission is making use thereof even though the particular final valuation was not at the time completed.

Consideration of all of the above matters, convinces us that these valuations are of very great importance and will have a very far-reaching practical effect. If this be true, the importance of having them made in the manner required by the act is great. Therefore, we think it cannot be said that the carriers have no legal rights affected until there arises an actual controversy in which it is sought to introduce such valuations as evidence. It may be that the courts have no jurisdiction to review, in a direct attack upon such a valuation, the accuracy of the conclusions reached by the commission, but the question of whether the commission has done its work in the way Congress required is very different. That is a question of the *power* of the commission, not of the accuracy of its work done under powers it has. As this petition challenges the powers of the commission, we think this court has jurisdiction to entertain and should determine whether this challenge is sustainable.

It has been suggested that if the commission has departed from its authority, the remedy is by mandamus and not through the equitable remedy of injunction. It seems to us that mandamus would not afford adequate relief under the circumstances of this case. Petitioners are claiming that the valuations were not made in accordance with the act. The major defects, alleged here, were urged upon the commission before the valuation became final and it was unable to agree with petitioners' position. The denial appears first in the final valuations. This action is promptly brought thereafter. It would seem that petitioners had been very diligent, had afforded the commission full opportunity to accord them the rights they deem theirs and will be harmed if the final valuations stand and if petitioners are correct in their statement of their rights. We think they can be adequately protected only through proper decrees enjoining the final valuations. Therefore, that the form of this action is proper and the subject matter of equitable cognizance.

In the instant case, a final valuation of the commission is challenged and the order of finality would have such an effect upon the rights of the petitioners as to make it an order assailable under the statute. While in the case of *Delaware & Hudson Co. v. United States*, [295 Fed 558], the Supreme Court held that the action was prematurely instituted because it sought to enjoin a tentative valuation only, yet in the opinion of the court it was held that "under the circumstances disclosed, appellants must pursue the remedy provided by the statute and give the commission opportunity to take final action before they can properly ask interposition by the courts." The order here challenged was such a final action of the commission as to entitle the petitioners to resort to this court.

### The Power of the Commission Examined

After concluding that it had jurisdiction to review the valuation order the court said that its inquiry into the controversy would be limited to an examination of the record before the commission to determine "whether or not that tribunal exercised in a regular manner its jurisdiction over the subject involved and whether in reaching a determination disregarded any of the constitutional rights of the petitioners." Extracts from the findings of the court regarding the power of the commission to make the orders assailed are as follows:

As hereinbefore stated, the commission was directed to "ascertain and report in detail as to each piece of property, other than land, owned or used by said common carrier for its purposes as a common carrier; the original cost to date; the cost of reproduction new; the cost of reproduction less depreciation, and an analysis of the methods by which these several costs are obtained and the reason for their differences, if any."

Admittedly, the commission did not do this but substituted for "the original cost to date" its own judgment as to what the investment of the petitioners had been. The legislative mandate was to determine "the original cost to date" and the petitioners claim that this cost could have been easily ascertained as the facts and figures were available to the commission for this purpose. Moreover, no attempt was made to present "an analysis of the methods by which these several costs are obtained and the reason for their differences, if any."

The final valuation, by order of March 4th, 1924, was fixed at \$49,016,268, and such value was limited to a valuation "for rate-making purposes." The commission had no right thus to restrict a valuation which, when finally made, was designed to become *prima facie* evidence "in all proceedings under the act to regulate commerce \* \* \* in all judicial proceedings for the enforcement of the act \* \* \* and in all judicial proceedings brought to enjoin, set aside or suspend in whole or in part any order of the Interstate Commerce Commission."

The Congressional purpose was for an ascertainment and report on the true value of the properties of the carrier.

A further duty devolved upon the commission to "ascertain and report separately other values and elements of value, if any, of the property of such common carrier and an analysis of the methods of valuation employed and of the reasons for any differences between any such value and each of the foregoing cost values." The commission declined to make any allowance whatever for recognized elements of value which may be defined as intangible values. This was doubtless the meaning of Congress when it directed that the commission "ascertain and report separately other values and elements of values, if any." On this question the decisions of the Supreme Court of the United States declare: "That there is an element of value in an assembled and established plant, doing business and earning money, over one not thus advanced is self-evident. This element of value is a property right, and should be considered in determining the value of the property, upon which the owner has a right to make a fair return when the same is privately owned, although dedicated to public use."

In making its valuation the commission may have experienced difficulty in determining present value of the properties of the petitioners. The original cost to date should have been ascertained, as well as the cost of reproduction new and the cost of reproduction less depreciation. While these would not constitute decisive factors, yet they are "matters for consideration."

It would have been reasonable for the commission to have stated the reasons for any differences between any such value and each of the foregoing cost values.

Similar considerations apparently controlled the commission with respect to land values. The original cost of lands, rights of way, terminals, etc., was not ascertained and used by the commission in reaching its conclusions as to present value. As was said in the *McCardle* case, *supra*:

"Prices and values have so changed that the amount paid for land in the early years of the enterprise and the cost of plant elements constructed prior to the great rise of prices due to the war do not constitute any real indication of their value at the present time."

The court further said in the *McCardle* case that in the absence of a definite trend of prices, either upward or downward, and in the absence of a probable substantial change of prices "then the present value of lands plus the present cost of constructing the plant, less depreciation if any, is a fair measure of the value of the physical elements of the property."

The foregoing constitute a sufficient statement of the grounds of complaint urged by petitioners. It is the duty of the commission to construe and apply the law correctly and to act in all of its proceedings within its statutory powers. Otherwise its orders are invalid.

As above indicated, the commission did not correctly construe and apply the law. It acted beyond its statutory powers and contrary to the evidence, all of which resulted in a denial to the petitioners of their constitutional rights. Accordingly, the several orders of the commission, wherein the valuation of the properties of the carrier is made final will be annulled and the enforcement thereof enjoined.

THE CANADIAN NATIONAL, according to a statement made by Sir Henry Thornton, president of the company, now has in use ten radio broadcasting stations and has radio receiving apparatus on 50 trains.

# Valuation Case in Supreme Court

*First suit to set aside a final valuation made  
by the I. C. C.*

**A**RGUMENT was heard by the Supreme Court of the United States on January 3 and 4 on the appeal of the United States and the Interstate Commerce Commission from the decision of the federal district court for the southern district of California annulling the commission's final valuation of the Los Angeles & Salt Lake, the first "final" valuation made by the commission. This is also the first suit taken to the courts to set aside a final valuation made by the commission and the Los Angeles & Salt Lake, with a road mileage of 981, is the largest railroad for which a "final value for rate-making purposes" has been found by the commission.

The commission's final valuation figure was \$45,000,000 as of 1914, to which it later added \$200,000, while the company claims a value of over \$70,000,000.

## Comprehensive Review Urged

While the lower court, in holding that the sum found by the commission was too low and that the commission had no authority to find "value for rate-making purposes" as distinguished from "true value," did not decide or discuss many of the grounds urged by the railroad for holding the valuation order invalid, the railroad urged upon the Supreme Court that the public interest would be served by a comprehensive review of all the grounds of invalidity urged against the order of the commission, saying:

"Upon the affirmance of the decree below it will devolve upon the commission to make a new valuation of the properties of petitioner. It is reasonable to expect that in doing so the commission will, unless otherwise directed by this court, be governed by the same principles which governed the valuation under review and which are charged by petitioner herein to be unsound and illegal. It has applied the same principles in the valuation of the property of many other carriers and will undoubtedly continue to apply them in future valuations. The extent to which there must be further litigation by petitioner and other carriers of issues involving the administration of the valuation act will be very largely determined by the scope of the decision of this court in the present case."

The argument was presented by Blackburn Esterline, assistant to the Attorney General; P. J. Farrell, chief counsel of the Interstate Commerce Commission, and Charles E. Hughes, for the railroad. Many prominent railroad lawyers and others interested in valuation were present from all parts of the country. Justice Butler, who was formerly valuation counsel for the western railroads, did not sit with the court.

Mr. Esterline in his argument on behalf of the United States said that if the commission's valuation in this case falls, "the whole valuation act falls," and that he wished to register a vigorous protest against the way the district court had handled this case before the carriers are allowed to bring 1,800 valuation cases to the court for review under the expediting act.

Discussing the lower court's opinion that there can be only one true value, Mr. Esterline pointed out that the commission in its report had said that the separation of property used for the public and that not so used is

preserved by a careful classification of carrier and non-carrier property, and that it had reported all the values and elements of value it could discover which could be used as a basis for finding value for any purpose. The basis of the valuation act, he contended, was the desire to have a valuation for rate-making purposes, the need for which had been urged by the commission for many years, and the purpose was to create a rule of evidence for use in rate cases. He added that the court below had not attacked a single item of the valuation, while holding that the commission had no authority to find value for rate-making purposes. The government claims, he said, that this valuation report is not an order of the commission, within the meaning of the statutes providing for the setting aside of an order of the commission by the courts, but that it is a finding which may be used as prima facie evidence only, before the commission or the courts, and that the door is open to the carriers to meet the valuations there and try to prove they ought to be higher if they want to. "But they tried to strike this down as soon as it was declared," he said.

Mr. Hughes said in part: "We do not challenge any administrative action of the commission. We challenge the authority of the commission to make this order. We say the commission has failed to obey the statute and that its order is not entitled to the administrative effect intended by Congress to attach to it. The value found is not that which Congress required should be found. Also the commission has failed to set forth an analysis of its methods 'and to set forth other values and elements of value.' It has selected an arbitrary and unreasonable valuation date and has used unit prices as of that date and 5 to 10 years before. The commission has failed to report original cost and it has applied an unsound and unwarranted principle in finding cost of reproduction new and less depreciation."

Referring to the railroad's capitalization of over \$56,000,000 in bonds and \$25,000,000 in stock, Mr. Hughes said: "This order is a solemn declaration from the commission that this corporation is insolvent."

Mr. Hughes then said that the district court at Kansas City had reached a conclusion in the Kansas City Southern case similar to that in the Los Angeles case, so that up to date six judges have supported, in part at least, the contentions made by the railroad.

Discussing the question of jurisdiction, he said that jurisdiction is expressly conferred by the statute and that the railroad is also entitled to appeal for relief. "It was not intended to vest an unreviewable discretion," he said. "We are not challenging the right to make a valuation order prima facie evidence, but we say that this is not the order that Congress intended should be used as evidence." Regardless of the purpose or intentions of the advocates of a valuation law, he said, Congress had provided in the transportation act that the valuations obtained under section 19a should be used in many ways other than for rate-making purposes, and it is absurd to say that the railroads must wait until the valuations are actually used for these purposes before seeking a review of them.

"This is the final action of the commission and we are faced with it wherever we may go. Suppose the rail-

WASHINGTON, D. C.



road wants to issue bonds. It can't do so without the approval of the commission and this valuation order stands there against it."

#### Hughes Says Commission Has

##### Inverted Purpose of the Law

Mr. Hughes also said that the practice of the commission represents a "strange inversion." "The law said it should find the value and then allow a fair return on it, but the commission said it would find what the railroads should be allowed a return on and called that value."

He quoted from Commissioner Eastman's dissenting opinion that the commission was not finding what the railroads were "worth" but a "rate base" and said that Congress had directed the commission to find "value" not a "rate base." When Justice Brandeis asked why he quoted from the dissenting opinion before telling what the majority had held, Mr. Hughes said that the majority of the commission had sought to "immunize" themselves in trying to reconcile their findings with the statute but that the minority had "smoked them out." He also quoted from Commissioner Meyer's separate concurring opinion in which he said that the final value was a figure at which the minds of the commissioners could meet although probably there might be as many bases for justifying any given figure as there were commissioners. "They were supposed to find out what the value was," he said, "not what they thought the railroads ought to be allowed to earn upon, and they had no right to screen themselves behind a qualification that this was a value for rate-making purposes."

The 354-page brief filed on behalf of the railroad said that in addition to the \$45,000,000 found as the value for rate-making purposes of the property devoted to common-carrier purposes, the commission had found that it was also the owner of lands, not used for common-carrier purposes, of a present value of \$3,369,647, making a total of \$48,369,647 for all of its property, as against the contention of the company that it was worth over \$70,000,000 at valuation date and against a total outstanding capitalization on June 7, 1923, the date of the commission's order, of \$95,464,595. The supplemental tentative valuation had been \$45,871,093 for the carrier property but after the hearing the commission had reduced this to \$45,000,000.

#### The Railroad Brief

Among the points made in the brief are:

That the commission, because it fixed an arbitrary rate base, instead of finding value, as required by the valuation act, ignored facts and factors which are of major importance in the determination of value, such as elements of value evidenced by earning power, trackage and terminal rights, going concern value and appreciation.

That the valuation fixed as of a date nine years prior to the date of its announcement and predicated upon obsolete prices is unwarranted and misleading.

That the rules adopted by the commission for the valuation and classification of lands were unsound and unwarranted by law.

That the treatment by the commission of original cost is contrary to the requirement of the valuation act.

That the restatement by the commission of petitioner's investment account is wrong in principle and erroneous and misleading in point of fact.

That the commission's estimates of cost of reproduction are incomplete and erroneous.

That the commission's treatment of the question of depreciation is arbitrary and unwarranted.

That the commission, as found by the district court, fixed the value of petitioner's property for rate-making purposes far below the actual value thereof as established by the evidence.

In support of the petition for relief the brief says:

It goes without saying that an announcement, which bears the least semblance of being authoritative, of a value for a particular railroad that is less by many millions of dollars than the amount which the railroad has claimed and has induced the financial public to believe to be the actual value of its property, and which is less by many millions of dollars than the amount which it has already borrowed against its property as represented by its outstanding bonds whose only security is a first mortgage thereon, must necessarily have a most disastrous effect upon the credit of the railroad and seriously impair its ability to borrow additional funds in the future for any purpose.

The damage complained of in this connection relates not only to the use by the commission of its final valuation in passing upon an application which may be filed with it by petitioner seeking approval of such plan for consolidation as may finally be worked out, but also and more particularly to the damaging effect on petitioner of the final valuation in its negotiations with other carriers looking to an agreement for consolidation. Still another way in which petitioner is shown to be damaged by the final valuation is in the use made of it by the commission in discharging its duties under section 15a of the act relating to the establishment and adjustment of rates for the carriers of the country as a whole, or in groups, and under section 15 relating to the fixing of divisions of joint rates between carriers. In cases of both classes the commission is required by the Act to make use of the final valuations fixed by it under the valuation act. From the very nature of these cases, involving as they do either all the railroads in the country or large groups of railroads, it is a practical impossibility to try out in them, in a way which will adequately present for court review, the question of the correctness of the commission's valuation of individual lines. The result is that petitioner as a practical matter is without recourse in those cases against the damaging use which is thus being made in them of the final valuation of its property.

In connection with the argument that in finding what it designates value for rate-making purposes the commission has failed to comply with the statute the brief says that a railroad has but one value and that if it is to be held to a fair return on the sum designated as value for rate-making purposes it is idle to talk about "exchange value" or "commercial value" because it would no longer have a market value higher than that on which it would be allowed to earn. The brief continues:

While the commission states that it has ascertained a value, its further statement that this value so ascertained is the figure that commends itself to its judgment as a proper base upon which the carrier is entitled to earn a fair return shows an entire misconception of the meaning of value and of its duty under the valuation act to find value.

Apparently the commission proceeds somewhat as follows: 1. Under the decisions of the courts a carrier is entitled to earn a fair return on its value. 2. It would be fair to permit this carrier to earn a fair return on \$45,000,000. 3. Therefore \$45,000,000 is its value.

We charge the commission with a clear violation of a statutory duty. Instead of reporting the real value of the property of the petitioner, as it is enjoined to do by the valuation act, it has reported what it terms value for rate-making purposes. It is not a mere matter of terminology because, while the failure of the commission to state its methods of valuation—as is also required by the valuation act—leaves, as one commissioner has said, "clouds of mystery" over all it does, the report does show that the value of this property has not been ascertained. We are told by one commissioner that "the use of the word value conveys to the public the impression that we are determining what the railroads are worth, an impression which is wholly erroneous" and that "the goal to which these proceedings are directed is the determination of the extent to which the earning power of a public service monopoly may without confiscation be limited by public regulation." There is nothing in the report of the majority to indicate any dissent from this announcement as to the goal to which the work of the commission has been directed. In another case the commission says of this value for rate-making purposes that it is that "figure that commends itself to our judgment as a proper base upon which these carriers



are entitled to earn a fair return." The most that can be said for the commission's decision is that it has ignored the will of Congress, which directs it to ascertain value. So we say that there is here a clear violation by the commission of a statutory duty imposed upon it. No excuse whatever is proffered. No excuse could be made, because value exists and value can be found.

#### 1914 Valuation in 1923

Regarding the issuance in 1923 of a valuation as of 1914, the brief says:

Whatever may have been the situation as to the commission's knowledge or anticipation of price changes at the time it first reached the conclusion to base all of its cost estimates on prices as of June 30, 1914, and five or ten years prior thereto, it did have knowledge in August, 1919, when it issued its tentative valuation, and on June 29, 1921, when it concluded the hearing on the railroad company's protest, and on June 7, 1923, the date of its final valuation, of the revolutionary price changes that had occurred prior to the issuance of its tentative valuation. But, by its refusal to change the plan and conclusion adopted in the early stages of its valuation work, the commission ignored the enormous increase in price levels consequent upon the greatest war in history.

Following its rule and formula above quoted, the commission applies the same unit prices—i.e. those prevailing June 30, 1914,—to all railroads and in all cases regardless not only of the change in prices but also of the date of the creation of the property or of additions and betterments, even though subsequent to June 30, 1914. The commission has fixed its valuation dates and accordingly made its inventories of many of the railroads, including many of the larger systems, as of dates long subsequent to 1914, that is to say, of 1916, 1918, 1919, 1920, and in some instances even later dates. But in valuing them it has applied prices as of June 30, 1914, the same as in the present case, although including in the inventories to which such prices have been applied all of the additions and betterments (including equipment) made during subsequent years—during federal control and during the highest period of war prices. It has applied 1914 prices to improvements which actually cost from 50 to 100 per cent, or even more, in excess of the prices thus applied.

It is evident, we submit, from this and from a consideration of the entire order and of the majority and concurring reports that it was the purpose and intention of the commission that this order should completely foreclose all inquiry by it as to the value on any future date of petitioner's property which was in existence on June 30, 1914; that as to the property then in existence the value fixed as of that date should be accepted as its value at any and all times in the future regardless of changes in price levels and in values generally which may have occurred in the meantime; and that in arriving at the value of petitioner's property as a whole on any subsequent date consideration need be given only to the amounts to be added or deducted from the 1914 value to cover changes in the property since that date; that in all formal and informal proceedings before the commission, or conferences among its members, wherever the value of such property becomes material, whether in connection with the establishment or adjustment of rates, the fixing of divisions of joint rates, the recapture of excess earnings, the issuance of securities, the consolidation of petitioner's property with other properties, or in whatever manner the question of value may arise, the order should be considered by the commission as establishing the value of the property as of June 30, 1914, and that value should be brought down to the date of the inquiry by the mere addition of any expenditures made subsequent to that date for additions and betterments and by the subtraction therefrom of amounts to account for retirements and any additional depreciation which the commission may theoretically assume or find to have occurred therein.

Some extracts from the brief filed by the Interstate Commerce Commission were published in the issue of December 18, page 1220.

THE BOSTON & MAINE now has 126 passenger trains (240 cars) electrically lighted, having within the last few months doubled the number of cars thus fitted. Over 100 cars used in through service have had electric lights for several years. By the end of 1927, it is planned to have this improvement in the coaches of substantially all of the company's passenger trains now being operated.

## Lock Nut Made with New Thread Form

THE Graham Bolt & Nut Company, Pittsburgh, Pa., has recently announced the production of a lock nut with a self locking form of thread, to be known as the Selflock. This form of thread is a mechanical development of screw threads to produce a locking element in nuts, which can be used in conjunction with bolts having U. S. Standard threads. In developing this thread as many of the characteristics of the U. S. S. thread were maintained as possible, resulting in the following common characteristics: Equal

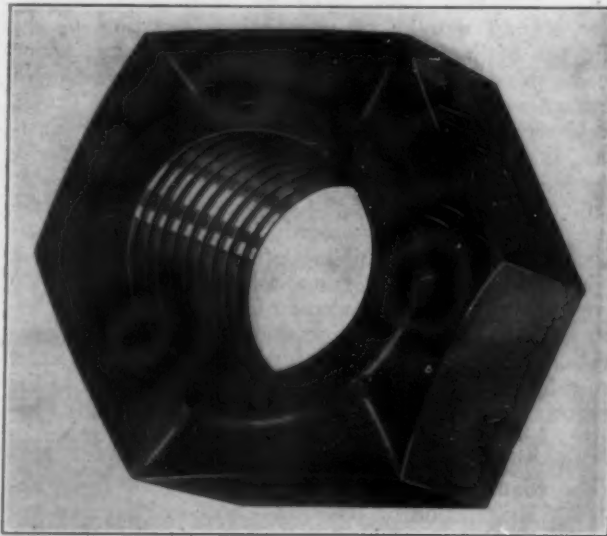


A Comparison of the U. S. S. Thread with the Thread Form Used in Selflock Nuts

areas, true U. S. S. lead, location of pitch line and U. S. S. flats.

One of the illustrations shows clearly a comparison of the Selflock thread with the U. S. S. The pitch line location is the same and it will be noticed that the thread form inside the pitch line is identically the same as U. S. S. while outside the pitch line the thread angles are slightly changed.

In the design of this lock nut there is no distortion of the thread, the lead being true U. S. S. and the helix



Selflock Nuts May Be Identified by this Star Crown

angle constant. Due to the equal thread areas no material is removed when Selflock nuts are applied on U. S. S. threaded bolts. The lead being true U. S. S. the nut may be applied from either face, the holding power developed being the same in either case.

When Selflock nuts are applied, that part of the thread on the bolt lying outside the pitch line is slightly tipped so as to create a definite frictional lock on every thread engaged by the nut. Should it be necessary to remove the nut it will require more wrench load to break the contact and start the nut off the bolt than was required

to put it on. The Selflock nut is applied in the usual manner—started with the fingers and wrenched to position.

U. S. S. nuts may be applied to bolts having had Selflock nuts on them. Should the U. S. S. nut be reasonable in size, a certain frictional lock will be developed as it will be necessary to bring the thread on the bolt back to suit the U. S. S. conditions in the nut. Selflock nuts may be applied many times to the same bolt thread. Should this be done so many times that sufficient lock is not developed, the nut can be reversed when the locking feature will again function.

Because of the fact that the locking feature of the Selflock nut is cut into the solid metal of the nut, it is impossible for the workman to change its locking value in any way—the nut cannot be normalized.

The manufacturer has been experimenting with this type of lock nuts for some time and actual service tests on locomotives, freight cars, frog and crossing bolts, track bolts, forging machines, cranes, rolling mill equipment and similar installations where severe vibratory conditions prevail are said to have demonstrated satisfactorily the ability of this type of thread to resist the loosening effect of vibration. The star crown shown in one illustration has been adopted as a means of identifying these nuts.

## Roads Fail to Agree on Oregon Construction Plan

WASHINGTON, D. C.

**T**HE Southern Pacific and the Oregon Trunk have notified the Interstate Commerce Commission that they have failed to reach an agreement, after several months of negotiations, relating to the joint use of lines in the Klamath basin, Oregon, which the commission had made a condition to its granting of certificates for new construction by the Oregon Trunk, the Central Pacific and the Oregon, California & Eastern. In making public the statements filed with it by the two roads the commission also made public a letter written by Commissioner Aitchison to the Public Service Commission of Oregon, which had asked the commission to order the building of new lines in Oregon, saying that the federal commission would be glad to have the benefit of the views of the Oregon commission as to the present situation as disclosed by these documents, "before considering a further order." The letter also called attention to the fact that an application of the Oregon commission for a re-opening of the case, because of the delay on the part of the railroads in reaching an agreement, has not yet been disposed of.

The commission's report in the combined cases entitled "Construction of Railroad Lines in Eastern Oregon," was abstracted in the *Railway Age* of May 15, 1926, page 1313. The Oregon, California & Eastern was granted a certificate for three branches, conditioned upon a grant to the Oregon Trunk of operating rights over its line between a point of connection and Klamath Falls, if the Oregon Trunk should fail to reach an agreement with the Southern Pacific for joint operation over its Natron cut-off. The Southern Pacific was authorized to acquire control of the O. C. & E., conditioned upon the consummation of an agreement whereby the Oregon Trunk would be enabled to operate either over the Natron cut-off or the line of the O. C. & E. The Oregon Trunk, which had asked authority to build from Bend to Klamath Falls, 178 miles, was authorized to build

only to a connection with the O. C. & E., subject to a condition that should it be granted trackage rights over the Southern Pacific from Paunina south to Klamath Falls, over the Natron cut-off, it should build only to the vicinity of Paunina.

The Oregon Trunk reports to the commission that the Southern Pacific is willing to grant it trackage rights over this line, but on terms which it considers prohibitive. It therefore asks that unless it is able to reach an agreement with the Southern Pacific for the use of this line as well as the O. C. & E., line from Klamath Falls to Sprague Landing, the commission modify its original order and permit it to build its line from Bend to Klamath Falls as originally proposed.

The Southern Pacific states that it has offered to the Oregon Trunk full and equal use of its line from Paunina to Klamath Falls, but that the Oregon Trunk has declined to accept its offer, and it solicits the good offices of the commission to secure acceptance. If the Oregon Trunk declines to accept the commission is asked to deny its application to build south of Paunina.

A counter-proposal made by the Oregon Trunk included a provision that it should be allowed a one-half interest in the so-called Strahorn line, the Oregon, California & Eastern, north and east of Klamath Falls, including proposed extensions into the Williamson and Sprague River Valleys. In its argument it says that if the Southern Pacific becomes the owner of the Strahorn line and extends it from Sprague Landing east and north as proposed, the Oregon Trunk would be seriously handicapped in its efforts to secure the traffic necessary to support its operations unless such extensions are joint. It also says that the use of the Southern Pacific main line on the terms proposed would require greater capital charges than the construction of the line proposed in its original application.

The Southern Pacific in its statement says that the commission's record shows that the action preferred by the commission and which, from the testimony, there was reason to believe would be acceptable to the Oregon Trunk, is covered by its offer. "The Southern Pacific," it says, "should receive the traffic of the Klamath basin to help earn a fair return on the very large investment already made in this region initially more than fifteen years ago and aggregating more than thirty-eight millions of dollars. This investment justifies all the patronage of the Klamath basin traffic. The main line of the Southern Pacific intersects the basin just as that of the Oregon Trunk does the Deschutes; through the Oregon, California & Eastern extended, the Southern Pacific proposes to give all the branch line service necessary to development of traffic in the Klamath basin."



Suburban Station on the Buenos Aires Western



# Seaboard Earnings Increase

*Traffic and earnings continue to grow notwithstanding collapse of Florida boom—New lines total 563 miles*

**T**HE Seaboard Air Line has the handicap of being the fourth large railroad system in the South. Being fourth is a handicap because the other three are larger, do more business, are better situated economically and strategically, and are therefore more prosperous and find it easier to spend money for capital improvements. The three other systems are, of course, the Southern, the Illinois Central which controls also the Central of Georgia, and the Atlantic Coast Line which controls the Louisville & Nashville, the Clinchfield, the Charleston & Western Carolina, the Atlanta, Birmingham & Atlantic, the Georgia Railroad, etc. Without analyzing the situation in detail, these systems have long-standing advantages which the Seaboard has not had.

In recent years the Seaboard Air Line has experienced a remarkable improvement. This has been in part due to the recently increased industrial prosperity of the South and to a greater extent to the sudden expansion

The increase in business and earning power continued throughout 1926 in spite of the collapse of the Florida boom last spring. The Seaboard carries rather less cotton than do some of the other southern roads and will presumably be less effected than might otherwise be the case by the decreased earning power of the cotton growing areas resulting from the present depressed price of that commodity.

## New Florida Lines

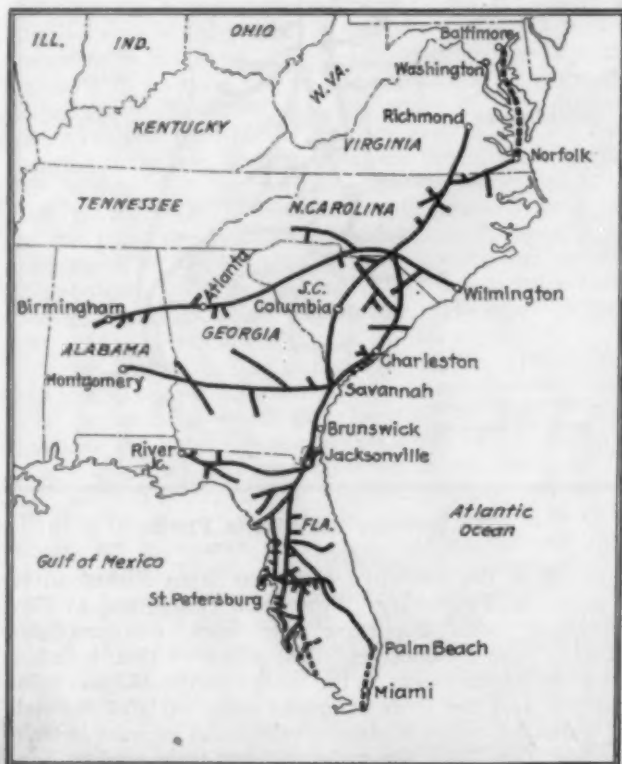
At the end of 1925, the Seaboard operated 3,929 miles of line as compared with 3,563 operated at the end of Federal control. Its main lines extend south from Richmond, Va., and Portsmouth, Va., to a connection at Norfolk, N. C., thence across North Carolina to Hamlet, N. C., whence there are lines to Wilmington, N. C., to Atlanta, Ga., and Birmingham, Ala., and two lines to Savannah. From the latter point there is a line to Montgomery and the main line extends on into Florida. Formerly there was a single main line extending in a southwestwardly direction across Florida to Tampa and St. Petersburg on the west coast, with several branches.

With the coming of the Florida expansion, an elaborate program of extensions was undertaken. On January 1, 1925, the Seaboard completed a 204-mile extension of its north and south main line to West Palm Beach which, in connection with the main line to Tampa, created the first and only cross-state line in southern Florida; extending from the east coast at West Palm Beach to the west coast at Tampa and St. Petersburg. In 1925 it supplemented its Florida facilities by a second main line to Tampa. This line, mainly intended for freight traffic, extended from Waldo, Fla., on the original line to Tampa, through Archer, Inverness and Brooksville to Tampa (155 miles) and was created by converting two secondary lines into main lines and joining them by 22 miles of new construction.

In 1925 also work was begun and is now completed on an extension from West Palm Beach to Miami (68 miles) on the east coast. Effective on January 1, 1926, the Seaboard took over under lease the Charlotte Harbor & Northern, which reaches Boca Grande on the west coast, and the Seaboard now is bringing to completion an extension from a point on the Charlotte Harbor & Northern at Fort Ogden, through Fort Myers to Naples, on the Gulf of Mexico, in connection with which there will be two branches, one from Fort Myers to Punta Russa (11 miles), and another from Fort Myers to La Belle (32 miles). The Miami line will give the Seaboard access to the prosperous tourist cities of the east coast between Palm Beach and Miami, an area hitherto served exclusively by the Florida East Coast. By means of the extensions to Fort Myers and Naples the Seaboard will now have a new route over which its best trains will move from these cities to the North effective this week.

## Growth of Traffic

When the several new projects named have been completed the Seaboard will have added a total of 563 miles to its Florida mileage through construction or lease within the past ten years. In 1925 the Seaboard's Florida mileage totaled 1,374 or 35 per cent of its total mileage.



The Seaboard Air Line

of Florida. Judging by what has taken place in connection with the latter it would appear that the management had long since become convinced that the destiny of the road is to be found in Florida. It has built important extensions there, as will presently be outlined. The increase in traffic from Florida has compelled it to make substantial improvement on its lines extending north of Florida, notably in the form of heavier rail, larger locomotives, signals, etc. To do so has required a race between increased capital expenditure and increased traffic, in which fortunately the latter has rather won out.

The Seaboard is favored by having a rather diversified traffic. In 1925, its revenue freight traffic was divided as follows: Products of agriculture, 11 per cent; animals and products, 1 per cent; products of mines, 35 per cent; products of forests, 19 per cent; manufacturers and miscellaneous, 29 per cent, and l.c.l., 5 per cent. As concerns the products of mines, the Seaboard handles only a small coal tonnage, but it has a sizeable traffic in phosphate. As relates to manufactured products, fertilizer, formerly the leading item in this group, was displaced in 1925 by refined petroleum and its products and by several items of building materials. The important thing in connection with the Seaboard's traffic, however, is its volume. The latest figures at present available are those for the first nine months of 1926. The figures for the following roads and for the southern region as a whole show increases over the same period of 1925 and the following interesting comparisons with the first nine months of 1920:

First 9 months	NET TON MILES (in thousands)		Per cent of inc.
	1926	1920	
Seaboard Air Line.....	3,061,035	2,185,671	40
Atlantic Coast Line.....	4,452,083	2,891,217	54
Southern Railway System.....	10,826,929	9,688,294	12
Central of Georgia.....	1,875,309	1,094,791	71
Florida East Coast.....	975,089	517,914	89
Total Southern Region.....	51,179,322	42,437,146	21

In 1925 twenty-seven per cent of the Seaboard's freight traffic (measured in ton-miles) moved within the state of Florida. In recent years the Seaboard has been much in the public mind because of its large holdings in Florida and its activities, entailing large expenditures, to keep pace with the growth of the state. With the rise and fall in the value of Florida land, there have been many who looked for the Seaboard to descend into poverty. But the facts belie the assumption. In no month in 1926 has the freight traffic of the Seaboard in Florida been less than in the corresponding month of the preceding so-called "boom-year." For the first nine months of 1926, its freight traffic was 25 per cent more than the same period of 1925 and the latest month for which figures are available (October) shows an increase of 17 per cent. Real estate transfers may have dropped off, but Florida is still very much alive and so is the Seaboard.

Continued prosperity in the South and in Florida has had its effect on Seaboard earnings. Its gross earnings for the first ten months of 1926 show an increase of \$4,583,493, or 9.5 per cent over the first ten months of 1925. For 20 consecutive months, the Seaboard's net income has shown an increase over the corresponding months of the preceding year.

#### More Economical Operation

Since 1921 the Seaboard's gross earnings per mile of road operated have increased 54 per cent, and while this has contributed to the improvement in its net income, more particularly is this due to the betterment in its physical condition and efficiency in transportation. In the first place, the Seaboard now owns approximately 22,149 freight cars, of which 9,082 have been purchased in the past four years and the remainder have been rebuilt and, as of December 1, but 5 per cent of its freight cars were in bad order. The Seaboard owns 688 locomotives and on a tractive effort basis 34.9 per cent have been purchased new in the last few years and on December 1 but 9.3 per cent of the locomotives were in or awaiting shops for repairs. This large percentage of modern locomotives and freight cars, and the repair of its equipment currently, not only enabled the Seaboard to maintain its equipment in 1926 for 15.2 per cent of its gross earnings—but this satisfactory equipment situation enabled it to speed up and cheapen the cost of transportation.

The Seaboard has profited considerably through the better utilization of its equipment. Its serviceable passenger locomotives averaged in 1926, according to latest figures, 131.3 miles, and its freight locomotives 83.0 miles per day, which compared favorably with its past records and those of other railroads. Increased efficiency in the movement of its freight cars is indicated by the fact that in 1922 the Seaboard moved 435 ton-miles of freight per serviceable freight car day and for the ten months of 1926, 521.1 ton-miles per freight car day. If the tonnage of the latter period had been moved on the basis of 1922 operations, the per diem charges would have been \$1,307,669 greater—or it would have had to own 4,302 additional freight cars, involving an expenditure for equipment of approximately \$10,000,000.

During the past several years maintenance of way expenses have absorbed large operating costs incident to the strengthening of roadway and structures for the more extended use of Mikado freight locomotives. Progressively. This policy has been pursued until at the present



The Seaboard Air Line in Florida

time all of the Seaboard main line from Richmond to Tampa, St. Petersburg, West Palm Beach, and to Birmingham, with important side lines, accommodates Mikado type locomotives. The effect of this, together with the improvement in the design of the Mikado locomotives and the more scientific make up and dispatch of trains, has brought about a substantial increase in train loading. In 1922, the gross and net train load of Seaboard freight trains was 1,140 tons and 465 tons, respectively; for the ten months of 1926, gross and net train load had grown to 1,442 tons and 586 tons, respectively. If the tonnage for the ten months of 1926 had been moved in trains loaded as in 1922, there would have been operated 1,552,784 freight train miles more than were actually operated. These train miles at \$1.355, representing the out-of-pocket cost per train-mile, represented a saving of \$2,104,022 in ten months. The record in October, 1926, when the Seaboard moved 5.1 per cent more tonnage than in any other October, created a record in freight traffic second only to March, 1926 (March is usually the peak month in



Seaboard freight traffic), the gross and net train load in October being 1,523 and 650, respectively, as compared with 1,442 and 586 averages for the first ten months in 1926.

The improved train load, the many additional operating facilities, including automatic signals, lengthened passing sidings and enlarged yards and a campaign in the efficiency of fuel consumption have produced large savings. The Seaboard consumed 176 lb. of coal per 1,000 gross ton-miles in 1922 in freight service, while for the first ten months in 1926 the consumption was 156 lb. per 1,000 gross ton-miles, which for the ten months represented a saving of \$257,000. In 1922, the Seaboard consumed 18.2 lb. of coal per passenger car mile, as compared with 13.4 lb. per passenger car mile in the first ten months of 1926. This reduced consumption of fuel applied to the passenger car miles for the first ten months of 1926 represented a saving of \$432,000 annually, in addition to the saving which has resulted in the lower price of fuel.

### New Signaling

As previously stated, since 1921 the gross earnings per mile of road have increased 54 per cent; in the same period freight traffic measured by gross ton-miles has increased 68.2 per cent. The Seaboard has absorbed 35.3 per cent of this increase in freight traffic through increased train loading, previously referred to, and to provide for the economical movement of the remainder of the increase in freight traffic and also for a still further increase it has been active in increasing the potential capacity of its main line by the installation of automatic signals from Richmond, Va., to Hamlet, N. C., a distance of 253 miles. At Hamlet, as previously noted, the Seaboard's main line diverges in three directions—one line to Atlanta and Birmingham and two lines to south Georgia and Florida points, one used primarily as a passenger route through Columbia, S. C., to Savannah, Ga., and the other used primarily for a freight line through Charleston, S. C., to Savannah, Ga., the distance being 248 miles and 260 miles respectively. The effect of these two routes is practically that of double track.

From Savannah, Ga., to Jacksonville, Fla. (140 miles), automatic signals are now being installed. At Gross, Fla., between Savannah and Jacksonville, and 30 miles north of the latter point, a cut-off extending to Baldwin, Fla. (35 miles), has been built within the past year for the purpose of shortening the distance into and out of Florida (14 miles), and also to provide what is in effect double track between Gross and Baldwin. From Baldwin, Fla., to Waldo, Fla. (38 miles), construction of double track is nearing completion, and, as previously stated, from Waldo, Fla., to Tampa, Fla. (155 miles), the Seaboard has two parallel routes of practically the same length, one used primarily for passenger and the other for freight traffic. Summarizing, between Richmond, Va., and Tampa, Fla., a distance of 845 miles, the Seaboard will soon have 393 miles protected by automatic signals and the remaining mileage either double tracked or double route mileage. These improvements have considerably increased the economical movement of its traffic.

The effect of these improvements which have been made largely within the last two years and many of which have been completed in recent months is that the Seaboard has been able to reduce its transportation costs very materially. In 1922, the wage cost per 1,000 gross ton-miles was \$0.473 after equating for the increase in wages amounting to approximately six per cent granted train service employees in April, 1924; the com-

parable wage cost for the first ten months of 1926 was \$0.37. This reduction in the wage cost per 1,000 gross ton-miles applied to freight traffic for the first ten months of 1926 constituted a saving of \$870,000. The improvement in this item of transportation expense has been cumulative; as an illustration, the wage cost per 1,000 gross ton-miles in October, 1926, was \$0.312 or 21.8 per cent lower than October, 1925, and 15.7 per cent lower than the average for the first ten months of 1926. These economies are further reflected in the statement that in October, 1926, while freight traffic increased 5.1 per cent, total transportation wages decreased 17.8 per cent and overtime was reduced 36.2 per cent as compared with the corresponding month of the year before.

### Final Results

The Seaboard's improvements have required large capital expenditures, but its net earnings have increased in greater ratio than have the fixed charges. Thus the standard return for operations during Federal control, or the average annual net railway operating income for the three years ended June 30, 1917, was \$6,497,025, whereas the net railway operating income in 1925 was \$10,822,731, or 62 per cent greater. As far as figures are available for 1926 there is indicated an increase in net operating income over 1925 of 9.5 per cent. The investment in road and equipment at the end of 1925 was about 20 per cent greater than on June 30, 1916, or at the middle of the test period.

The Seaboard had outstanding at the end of 1925 \$37,000,000 common stock, \$24,000,000 of preferred and its funded debt totaled \$165,000,000. Since 1920, before the Florida expansion began on its present scale, there has been an increase in the funded debt of \$30,000,000, of which \$17,000,000 (to December 31, 1925) was in the form of equipment trust obligations. Recently the road sold \$11,000,000 additional equipment trust certificates covering the purchase of 50 locomotives, 3,450 freight cars and 80 passenger train cars. The result has been that interest on funded debt (exclusive of the adjustment bonds) in 1921 was \$5,201,299, but in 1925 it was \$6,850,385. However, the road operated at a deficit in 1921 but in 1925 it earned net income, sufficiently large to equal \$4.39 a share on the common stock after allowance for interest on the adjustment mortgage bonds and dividends on the preferred stock. The adjustment mortgage bonds mentioned total \$25,000,000 and receive 5 per cent interest which totals \$1,250,000 annually. This interest was passed from 1921 to 1924, and there is still 12½ per cent in arrears. The preferred stock is 4 per cent non-cumulative, with a provision that after the common receives 4 per cent the preferred shall receive an additional 2 per cent but no dividends have ever been paid on either issue.

The Seaboard in spite of its recent heavy purchases of equipment still suffers from heavy charges for hire of equipment. In 1925 it had a debit hire of equipment balance of no less than \$2,148,605. In 1924 the total was only \$412,865, but the total for 1926 will apparently be more like that in 1925 than in 1924.

THE SOUTHERN has just put in service a telephone line for train dispatching between Meridian, Miss., and New Orleans, 202 miles and now has this facility throughout the line from Cincinnati to New Orleans; also throughout its line between Washington and New Orleans. All of these lines will soon have automatic block signals in service, the last two short stretches still lacking these signals being now in the hands of the workmen.

# Use of High Steam Pressure in Locomotives

*Discussion at annual meeting of the A. S. M. E. points out many economies in locomotive operation*

THE paper on the use of high steam pressure in locomotives, presented at the annual meeting of the American Society of Mechanical Engineers by Edward C. Schmidt, professor of railway engineering, and the late John M. Snodgrass, professor of railway mechanical engineering, both of the University of Illinois, elicited written discussions from several engineers. Among those commenting on this paper, an ab-

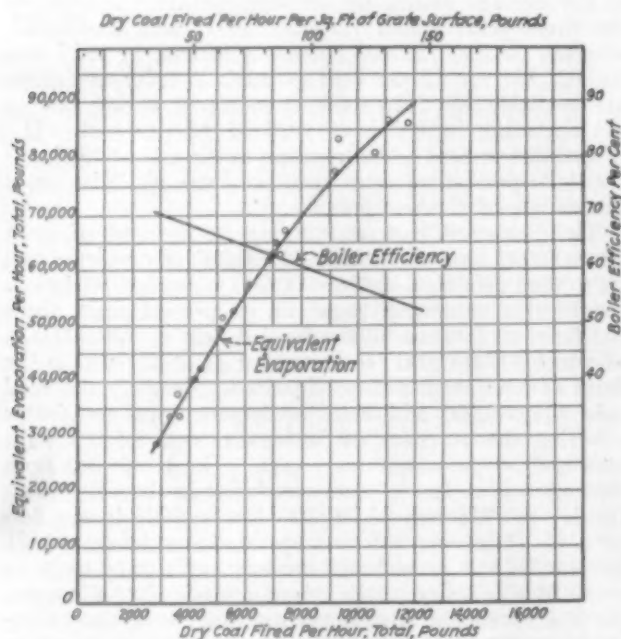


Fig. 1—Evaporation and Boiler Efficiency Curves of the Baldwin Locomotive

stract of which was published in the December 18, 1926, issue of the *Railway Age*, page 1222, was Lawford H. Fry, metallurgical engineer, Standard Steel Works, Burnham, Pa.; A. I. Lipetz, consulting engineer, American Locomotive Company, Schenectady, N. Y.; V. L. Jones, assistant mechanical engineer, New York, New Haven & Hartford, and James M. Taggart, consulting engineer, New York.

## Lawford H. Fry's Paper

Lawford H. Fry discussed the figures given in Table I of the paper to illustrate the gain in efficiency made possible by the use of high steam pressures, which he said needed amplification, and gave a short description of the high pressure locomotive built by the Baldwin Locomotive Works for the Pennsylvania, together with some of the results of tests made with it on the Pennsylvania locomotive testing plant at Altoona, Pa. An abstract of his paper follows:

The calculations as to the efficiency of increased pres-

ures, from which the figures in Table I were obtained, are based on a constant superheat of 250 deg. so that an increase in pressure is accompanied by an increase in steam temperature and also by an increase in the total heat of the steam. The increases in efficiency are, therefore, not necessarily due alone to the increases in pressures. Unless a radical change is made in existing locomotive boiler designs an increase in steam temperature will not be obtained or will represent a considerable loss in boiler efficiency. It, therefore, appears preferable to base comparisons not on uniform superheat, but on uniform steam temperature, say 650 deg. F. This will give about 260 deg. superheat at 200 lb. and about 175 deg. superheat at 600 lb. per sq. in. Also the total heat will fall off with increasing pressure, being approximately 1,340 B.t.u. for 200 lb. and 1,325 B.t.u. for 600 lb. per sq. in. The efficiency shown by the Rankine cycle under these conditions is about 30 per cent better for 600 lb. than for 200 lb. per sq. in.

## Application of Rankine Cycle Is Impracticable

It is suggested, however, that the Rankine cycle is not a good basis for comparing locomotive cylinder efficiencies. It assumes that the steam is expanded adiabatically from boiler pressure all the way down to the exhaust pressure, which latter is taken in the paper to be 20 lb. per sq. in. absolute. With steam of 200 lb. per sq. in., this means an expansion of about six and one-half times, and with steam of 600 lb. per sq. in., an expansion nearly 17 times. These do not represent conditions realizable in any existing reciprocating locomotive design. With single expansion cylinders, expansions up to three or three and one-half times are usual, while with compound cylinders the expansion can be carried to four or five. It is suggested that for comparing loco-

TABLE I—INCLUDED IN THE ORIGINAL PAPER, SHOWING RANKINE-CYCLE EFFICIENCIES FOR SINGLE-EXPANSION CYLINDERS, USING STEAM AT VARIOUS INITIAL PRESSURES, SUPERHEAT OF 250 DEG., AND EXHAUSTING AGAINST 20 LB. ABSOLUTE BACK PRESSURE

Initial steam pressure, lb. per sq. in. gage	Temperatures		Rankine-cycle efficiency per cent	Gain in efficiency over that attained with 200 lb. initial pressure, per cent	Increment of gain per cent
	Of the saturated steam, deg. Fahr.	Of the superheated steam, deg. Fahr.			
200	388.0	638.0	18.90	....	....
250	406.2	656.2	20.34	7.61	7.61
300	421.9	671.9	21.50	13.75	6.14
350	435.9	685.9	22.49	19.00	5.25
400	448.4	698.4	23.38	23.70	4.70
500	470.2	720.2	24.81	31.28	7.58
600	489.1	739.1	25.98	37.46	6.18
700	505.7	755.7	26.95	42.59	5.13
800	520.6	770.6	27.76	46.88	4.29
900	534.2	784.2	28.47	50.63	3.75

motive cylinder efficiencies, the ideal cycle should be based on admission at boiler pressure, adiabatic expansion to a definite number of expansions, say three, then release to exhaust pressure and exhaust at that pressure. On the basis of such a cycle, the gain shown by high pressures will be very much less than those shown by the unattainable Rankine cycle, with its impossibly high expansions for high pressures. From such an analysis



and from a study of test results, it seems proper to conclude that the gain actually obtainable by the use of high steam pressures in locomotive practice, though less than those indicated by the figures in the table presented by the authors of the paper will be substantial. At the same time as pressures are increased, it becomes important to aim at an increase in the expansion of the steam.

This discussion is not intended to throw doubt on the usefulness of high pressures in locomotive work, but to suggest that the thermodynamic problems are so complicated as to deserve much more thorough analysis than is given in the paper. For those desiring to make a further study of the question, attention is called to a very complete paper on the economic value of increased steam pressure by H. L. Guy, which was read recently before the Northwestern Branch of the Institution of Mechanical Engineers, and reported in *Engineering*, November 9, 1926.

This paper considers stationary practice with steam at a constant temperature of 700 deg. F. exhausted to a vacuum of 29 in. of water and concludes that under these conditions, when installation and operating costs are taken into consideration, the best economic results will be obtained with pressures from about 400 to 600 lb.

#### The Baldwin High Pressure Locomotive

Time available here does not permit any such detailed study being applied to locomotive conditions, and it seems better for the present to remain on the firmer ground of practical experience. Pressures of 240 and 250 lb. per sq. in. are, as the authors point out, firmly established in American practice. In fact, the figures given as to the number of such locomotives in service should be increased considerably. The Pennsylvania has now in operation over 600 2-10-2 type and 200 4-8-2 type locomotives using 250 lb. per sq. in., and to the water tube firebox locomotives must be added a 4-10-2 type, three-cylinder compound with 350 lb. per sq. in. built as an experiment by the Baldwin Locomotive Works. Actual measurements indicate that on the Pennsylvania locomotives the increase in pressure from 200 to 250 lb. per sq. in. gave a decrease of about 9 per cent in steam consumption, and that an increase to 350 lb. per sq. in. will give a further decrease of about 10 per cent. The gains in efficiency and the possibility of securing a large tractive force with cylinders of moderate size make pressures of 250 to 400 lb. per sq. in. worthy of careful consideration by locomotive designers, but if pressures in excess of 250 lb. per sq. in. are used, it seems desirable to eliminate the use of staybolts in the boiler and to adopt a cylinder design capable of giving a high degree of expansion.

The main dimensions of the Baldwin Locomotive Works 350-lb., three-cylinder compound, 4-10-2 type locomotive with a water tube firebox, are as follows:

Cylinders, diameter and stroke:	
High pressure (one) inside.....	27 in. by 32 in.
Low pressure (two) outside.....	27 in. by 32 in.
Diameter driving wheels.....	63½ in.
Heating surfaces:	
Firebox and arch tubes.....	772 sq. ft.
Flues and tubes.....	4,420 sq. ft.
Total evaporative.....	5,192 sq. ft.
Superheater (Type A).....	1,357 sq. ft.
Grate area.....	82.5 sq. ft.
Weight on driving wheels.....	338,400 lb.
Total weight of locomotive.....	457,500 lb.
Rated tractive force (compound).....	82,500 lb.

The general appearance of the locomotive differs in no way from that of a locomotive of the usual construction. The front view, shows the three cylinders which are controlled by three individual valve motions. The cylinders are compounded. The steam after passing through the middle cylinder is exhausted through a receiver in the cylinder saddle to the two outside cylinders.

The boiler pressure is 350 lb. and to carry this pres-

sure satisfactorily the firebox is of a modified Brotan design. One of the illustrations shows the outside appearance of the complete firebox before the firebrick sheathing is applied, and another illustration is of the box with one side removed, showing the arch tubes carrying the firebox arch which separates the front part of the box from the rear. The grate is applied back of the arch and the front portion of the firebox forms a combustion chamber.

The locomotive was exhibited at the A. R. A. convention of 1926 and then after being broken in on road service was tested at Altoona on the Pennsylvania locomotive testing plant. A complete report of these tests is not yet available for publication, but through the courtesy of J. T. Wallis, chief of motive power, Pennsylvania, a few advance figures are available.

#### Test Plant Water and Coal Rates

Fig. 1 shows the power and efficiency of the boiler. An equivalent evaporation of 85,000 lb. per hour was attained with about 11,900 lb. of dry coal fired per hour. At this maximum rate of firing the boiler efficiency was about 52 per cent. The results do not differ from those

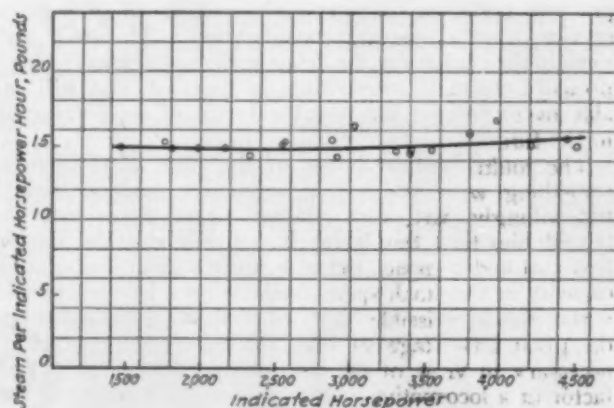


Fig. 2—Water Rate Per Indicated Horsepower-hour of the Baldwin Locomotive

to be obtained from a boiler of conventional design. This was expected as the water tube construction was adopted for the purpose of carrying the high pressure and not with the idea that it would give greater efficiency.

Fig. 2 shows the water rate per indicated horsepower in relation to the horsepower developed. This shows that in two tests the locomotive indicated 4,500 hp. In both of these tests this power was sustained continuously for an hour and could have been exceeded, but the capacity of the locomotive test plant had been reached. The water rate remains extremely uniform for all horsepower between 1,500 and 4,500 and is little affected by variations in speed and cut-offs. At speeds from 15 to 37.5 m.p.h. and cut-offs from 50 to 80 per cent in the high pressure cylinder the steam per indicated horsepower hour varied from 14.2 to 15.4 lb. In full gear, with 90 per cent cut-off in the high pressure cylinder, the water rate was 16.3 lb. at 15 m.p.h. and 16.6 lb. at 22.5 m.p.h. The dry coal per indicated horsepower-hour, as shown by Fig. 3, runs from 1.9 lb. at low powers up to 2.7 lb. at 4,500 hp.

Since coming off the test plant, the locomotive has been in road tests on the Pennsylvania and on the Baltimore & Ohio. The results in road service confirm those obtained on the test plant. No serious operating troubles have developed, and it is believed that the economy shown

will compel locomotive designers in the future to give careful consideration to high pressures and long expansions.

### Discussion by A. I. Lipetz

A. I. Lipetz, consulting engineer, American Locomotive Company, discussed the paper in part as follows:

The advantages of higher pressures from the point of view of greater tractive forces and greater power have been realized for years and if it were not for the difficulties involved in the construction and maintenance of locomotive boilers at those pressures, we would have had them long ago. In this respect it is interesting to recall that when the compound locomotive, which had caused a previous rise in boiler pressures, was supplanted by the superheated locomotive and the pressures were temporarily lowered, the innovation was welcomed by many railroad operators who were eager to reduce their boiler maintenance expenses. However, it did not last long, as the call for larger power revived the tendency of increasing boiler pressures, although the rise did not go on very rapidly.

The question of the suitability of the water tube high pressure boiler to the peculiar conditions of locomotive service, merits separate consideration. This will also explain the reason for the delay in the application of high pressure steam to locomotives in the past, and will enable us to foresee the possible forms of its application in the future.

The multi-fire-tube boiler of the early locomotive is something with which the locomotive designer would not willingly part, as a hundred years' experience has taught him that this boiler is not only reliable, low in first cost and compact, but also insures great evaporation capacity in the small space available on a locomotive and within the permissible limits of weight. Besides, it has the great advantage of heat storing capacity which is necessary in view of the constant variation in the load factor of a locomotive. Even in stationary plants, if the load factor fluctuates considerably, it is now customary to add a heat accumulator, usually of the Ruths type, to high pressure boilers. An attempt was made by Robert in France to depart radically from the conventional locomotive boiler type; he built in 1904, the first and only watertube boiler for a locomotive without any tubular part at all, but this attempt met with very little success and has never been repeated.\* All further designs, those of Brotan, McClellon, Muhlfeld and of the Schmidt Company of Germany, have the characteristic longitudinal barrel with fire tubes inside, thus retaining the heat storage feature of the ordinary locomotive boiler.

#### Pressure Limitations of the Fire Tube Boiler

The barrel design is not easily adaptable to high pressures; nevertheless we have already in this country two locomotives with boilers of this type carrying 350 lb. gage pressure and a third locomotive with even higher pressure is now under construction. The thickness of the barrel plates is already approaching the safe limit of manipulation by cold bending. It would seem, therefore, that 400 lb. represents the highest pressure for the type of boiler in which the barrel portion is subjected to the full pressure of the steam, unless we go to special steel for the barrel plates. As regards design, it will probably evolve into a combination of a watertube firebox with a barrel fire tube portion, embodying the best features of the McClellon and Muhlfeld boilers—provided, of course, that the higher cost of the boiler and its maintenance

due to possible scaling, etc., will not overbalance the economy in fuel. As a gain we shall still have the increase in power of the locomotive of a given weight as a result of lesser steam consumption, although possibly without much saving per unit of power.

Reverting to the Rankine efficiency table given in the paper, we see that by increasing the pressure from 200 to 400 lb. per sq. in., we increase the ideal efficiency by 23 per cent—this including the gain from the higher temperature of superheated steam. In order to make full use of the increase in ideal efficiency, it is necessary to maintain at least the same efficiency ratio. O. H. Hartmann's tests have shown that this is possible, if compounding is resorted to. It is very likely, though, that poppet valves with separate admission and exhaust passages will prove to be sufficient for single expansion from pressures in the neighborhood of 400 lb. per sq. in., without compounding, if the steam is superheated to 725 deg. or 750 deg. F. In either case, compounding or higher superheat will simply enable us to maintain a constant efficiency ratio, thus gaining the total 23 per cent due to the higher Rankine efficiency. It is, therefore, erroneous, as is sometimes being done in figuring out the advantage resulting from higher pressure, to

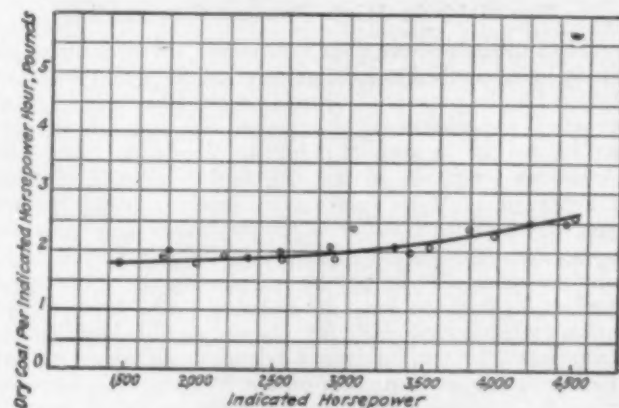


Fig. 3—Coal Rate Per Indicated Horsepower-hour of the Baldwin Locomotive

add the gain from compounding determined by experience with low pressures to the increased Rankine efficiency of the higher pressure. Nevertheless, it is safe to figure that by increasing the boiler pressure from 200 to 400 lb. per sq. in., or by doubling the pressure, we may gain about 23 per cent in power.

#### The Field for Two Pressure Stages

If a further increase in power is desired, higher pressures must be used. Another increment of gain amounting, incidentally to 23 per cent, can be obtained by a further doubling of pressure from 400 to 800 lb. per sq. in.\* However, it would be hardly advisable to use large riveted drums for these pressures and high temperatures, and it is questionable whether forged drums can be manufactured cheaply enough to be suitable for locomotive use. The German high pressure boiler described in the paper represents an interesting arrangement in which the watertube firebox is separated from the firetube barrel, thus permitting the pressure to be raised in the former to 800 lb., lowering at the same time that in the latter to 200 lb. per sq. in. The whole locomotive with its two-pressure boiler, double expansion of steam, mixing of low pressure superheated steam with the exhaust

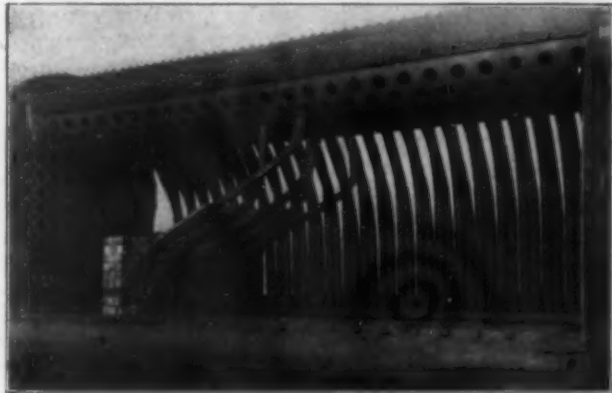
\*R. Garbe, *Die Dampflokomotive der Gegenwart*. Second edition, 1920, pages 192-193.

\*This incidentally shows that the increments of Rankine-efficiencies vary approximately in arithmetical progression when pressures vary in a geometrical progression—following very closely the parabolic law.



steam from the high pressure cylinder, resembles a modern high pressure stationary installation consisting of a high pressure watertube boiler, a two-stage expansion engine or turbine and a Ruths storage heat accumulator between the high and low pressure engines. The locomotive is complicated, but it seems to be the only logical solution of using a really high pressure boiler on a locomotive without subjecting the tubular drum to the high pressure of the steam.

In this particular instance the construction is still more complicated by using the indirect method of steam generation. It has the advantage, though, of permitting the



Firebox of the Baldwin Locomotive with One Side Removed Showing the Arch Tubes Carrying the Brick Arch

use of distilled water in the hottest part of the boiler, thus eliminating any scale formation inside the water tubes; in addition, the lower part of the high pressure drum is not exposed to the hot gases in the firebox. This arrangement may prove to be of great value for districts with bad untreated water; for railroads with fair, or treated water, the indirect steam generation will probably represent an unnecessary complication, and it is possible that an ordinary watertube boiler in combination with a low pressure tubular boiler may turn out to be just as good a proposition.

It must also be added that in the two-pressure boiler only part of the working steam has 800-lb. pressure, the other part being of 200 lb. only. The total gain in ideal efficiency will be, therefore, less than the 46 per cent given in the table, and it will depend upon the ratio of steam generated in the high pressure boiler to the total amount of steam. However, if this ratio could be kept somewhere between 70 and 80 per cent, the total gain may still amount to 30 or 35 per cent, which is indeed well worth striving for.

#### Value of High Steam Pressures

##### Varies With Cost of Fuel

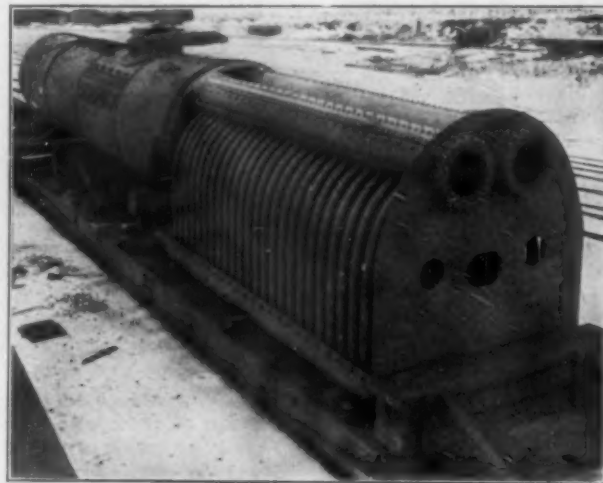
It seems, therefore, that we may have in the future two types of boilers—one of the connected water and fire-tube type for pressures in the neighborhood of 400 lb. per sq. in. and another of the separated water and fire-tube type for higher pressures, probably about 800-lb. gage pressure. In both cases the final superheat temperature will probably be between 700 and 750 deg. F. until material which can withstand higher temperatures becomes an ordinary market product. Only experience will teach us which of these two types is best suited to railroad service. It is possible that the moderately high pressure boiler will be preferred in many cases, at least in the near future. Later, however, if the price of the coal should go up, higher pressure, or as the

authors call it, ultra-high pressure, may become justifiable.

In this connection, and in conclusion, it may not be amiss to mention the study which G. G. Bell, West Penn Power Company, made last year on the question of the most economical pressures for stationary plants with coal prices of \$3.00, \$6.00 and \$9.00 per ton. His conclusions were that the higher the cost of coal and the higher the load factor, the more advisable is the use of high pressures. For the reheating cycle the most economical pressures were between 340 and 500 lb.; for the regenerative cycle they were higher—between 440 and 600 lb.\* This would indicate that there is no need for going beyond 500 lb. per sq. in. for locomotives. This would also seem to be in agreement with the investigations of Prof. A. G. Christie who favors pressures of only 400 to 500 lb. per sq. in. with very high superheat.† However, it must be borne in mind that the high evaporative rate required from a locomotive boiler may substantially change these findings and that actual experience with locomotives of both types is needed.

#### Discussion by V. L. Jones

V. L. Jones, assistant mechanical engineer, New York, New Haven & Hartford, in his discussion emphasized the fact that the conventional type of locomotive now in general use has about reached its limit of capacity and economy, with boiler pressures remaining near 200 lb. Anything but nominal increases in pressure, he said, must produce extensive changes in design and modifications of existing standard practice. In commenting on the statement of the author that it is possible with high steam pressure to obtain simultaneously both greater tractive force and greater power without the necessity,



The Completed Firebox of the Baldwin High Pressure Locomotive Ready for the Application of the Firebrick Walls

as with some locomotive devices, of trading economy for capacity, Mr. Jones emphasized the fact that it too often happens that a device for promoting locomotive economy forces a compromise in other features of the design. Up to the present time, he said, it had been the general practice to add devices and equipment to a boiler basically no different than those designed 20 or more years ago, whereas now it was becoming necessary to redesign the

\* Serial report of the Prime Movers Committee, National Electric Light Association, on higher steam pressures and temperatures, July, 1926, pages 20-21.

†Ibid, pages 4-7.

entire evaporating plant and that the feedwater heating section, the evaporating section and the superheating section must all be properly proportioned as a part of a complete design.

In commenting on the question of water tube fireboxes and bad water, he drew attention to the closed water tube stage of the German locomotive with two operating pressure stages as being a more complete development than any now in service. The two stages of working pressure he considered also particularly favorable from a heat balance standpoint. He also expressed the opinion that in general the use of the water tube type of firebox offers less difficulty in inspection, cleaning and general maintenance, with increase pressures, than the staybolt type of construction, basing his opinion on the experience with the Brotan firebox in Austria, and the Muhlfield and McClellon fireboxes in the United States.

Coming to the steam-using part of the locomotive power plant, Mr. Jones said that multiple expansion will probably become a necessity when boiler pressures exceed approximately 300 lb. and that without multiple expansion the use of pressures in excess of about 250 lb. will be extremely limited. This condition, therefore, makes it apparent that for appreciable increases in pressure beyond approximately 250 lb. the entire locomotive will have to be redesigned.

### J. M. Taggart's Discussion

J. M. Taggart, consulting engineer, made some interesting comparisons between the developments in steam locomotive practice and those in power plant practice. He said that the ideal locomotive would be one equipped with a complete watertube boiler, probably of the explosive type, with watertube furnace walls, a suitable superheater, economizer sections, air preheater, equipment for burning pulverized coal, engines on the uniflow principle, feedwater heating and air-cooled condensers. The advantages of this apparatus and equipment, he said, are apparent to any one familiar with present power plant practice.

He was of the opinion, however, that present day operating conditions would have to be considerably improved in order successfully to operate steam locomotives equipped with all the apparatus commonly used in the power plant. Clean feedwater would have to be provided at all water stops and equipment for handling pulverized fuel would have to be improved in order to meet the operating requirements of steam locomotives. The use of the uniflow principle in the locomotive cylinders, he said, would give the same advantages as compounding without as much complication. Mr. Taggart in commenting on the coal consumption of the combination water and fire tube boilers, drew attention to the fact that the best results that have been obtained even under tests, were about 2.3 to 2.5 lb. of coal per drawbar horsepower. Considering the standby losses, the uncertainty of hand-firing, etc., it is probable that the average results would not show lower than 4 lb. of coal per drawbar horsepower. With the equipment mentioned, he believed an efficiency at least twice as good should be possible.

"THE AMERICAN RAILWAYS as a whole are at present unable to handle the total volume of American commerce at peak load," said Winthrop M. Daniels, member of the Interstate Commerce Commission, in an address before the Toledo Transportation club. "This is a condition in which industrial America cannot and will not permanently acquiesce."—*Railway Age Gazette*, January 12, 1917.

## Sir Henry Thornton Urges Private Ownership

SIR HENRY THORNTON, president of the Canadian National, urged that increases in wages and reductions in rates proceed no faster than the maintenance of a sound, economic balance permits, in an address before the Illinois Manufacturers' Association in Chicago on December 17. "The tendency of wages is constantly upward," he said, "while the movement of rates is continuously downward. This is necessarily unavoidable and to be expected because the constantly improving standard of living demands an increasing return for the worker and the law of increasing returns permits within reason, a reduction in transportation tolls. Generally speaking, your railways are in a prosperous position and a measure of this prosperity must be charged to the fidelity, enterprise and efficiency of railway administrators.

"Certain things have come about which, while wise in themselves, have rendered more difficult the maintenance of railway solvency. Federal and state regulation, while essential for public protection, must not reach the point of adding unnecessary and burdensome expense to the railways.

The construction of the Panama Canal, in itself a fine achievement and one which has contributed much to the economic improvement of the country, has brought in its train of problems for the railways. It has changed the movement of traffic and has placed limits on the earning power, certainly of the western railways, and has generally produced an effect which merits a systematic consideration of railway position. The opening of the Panama canal has materially affected the earning power of international railway systems. Its construction was wise and in the interest of public welfare, but at least a moral responsibility rests upon the nation to see to it that that useful implement of commerce was not constructed in violation of the fundamentals of the constitution and those high moral principles which should inspire every nation in all its dealings. The acts of a nation should furnish a sound example, and a high standard of morals and tolerance on the part of the citizens cannot be expected unless the government itself pursues equally high principles.

"Three cardinal principles are essential to the existence of any railway as a private enterprise; (1) it must maintain solvency and meet its financial obligation; (2) it must furnish adequate transportation to the public at such rates as will permit the development of the community; (3) it must pay to its employees that wage which, under reasonable working conditions, will permit them to live in decency, comfort, and under sanitary conditions, and to educate and bring up their children as self-respecting members of society. A material departure from any of these three principles by privately-owned railway systems will probably excite a demand for state ownership, and a departure from all three will, in turn, inevitably produce that result. So far as the performance of its public responsibilities and the life of the community are concerned, solvency is perhaps the least important of the three, but insofar as the hastening of state ownership is concerned, it is probably the most important."

THE DOMINION OF CANADA has issued orders that no trains shall be run on the Sabbath day, except in cases of great emergency, and then only on direct order of the government.—*Railway Age*, January 12, 1877.



# McDonald New President Southern Pacific, Texas and Louisiana Lines

*Succeeds W. R. Scott, deceased—Continues as vice-chairman of executive committee in charge of New York office*

AT meetings of the executive committees of the several companies constituting the Southern Pacific, Texas and Louisiana Lines, held the last week in December, A. D. McDonald was elected president and H. M. Lull, executive vice-president, subject to the approval and ratification of such action by the boards of directors of the several corporations at meetings to be hereafter held.

Mr. McDonald succeeds W. R. Scott whose death from a heart attack was reported in the *Railway Age* of December 25. Mr. McDonald is at present vice-chairman of the executive committee of the Southern Pacific Company in charge of the New York office and will retain this position in addition to his new duties, with headquarters as hitherto in New York. The official announcement outlined the duties of Mr. McDonald and Mr. Lull as follows:

"The president will have general control and supervision of the company's affairs.

"The executive vice-president will have substantially the same authority and duties as the late president, W. R. Scott, that is jurisdiction and direct control over all departments and operations of the several companies and of all officers and employees engaged therein. He will have immediate charge of the management, operation, improvement and extension of the railroads and other transportation facilities, and the management of the other properties of the companies."

The Southern Pacific, Texas and Louisiana Lines, include the Southern Pacific's mileage east of El Paso, Tex. This totals 4,565 and is operated by 11 separate companies, all controlled by the Southern Pacific through majority stock ownership, and all managed by the same general officers. These companies include among others the Houston & Texas Central, the Galveston, Harrisburg & San Antonio, the Texas & New Orleans, Morgan's Louisiana & Texas, the Houston, East & West Texas, etc. The San Antonio & Aransas Pass is a part of the system but not one of the 11 companies as it is controlled by the Galveston, Harrisburg & San Antonio by lease. There is now pending before the Interstate Commerce Commission an application to

merge the 11 companies into a single company which merger it is proposed to carry out by lease of the physical properties of ten of the companies to the Texas & New Orleans.

Mr. McDonald has come up to his present position through the accounting department. He has been associated with the Southern Pacific System since 1901 when at the age of 22 he became a clerk in the accounting department of the Southern Pacific Lines at Hous-

ton. He was transferred to San Francisco in 1904. In 1907 he was made auditor of the Los Angeles Pacific Company (a Southern Pacific subsidiary) and in 1908 auditor of the Pacific Electric, in each case with headquarters at Los Angeles. From 1910 to 1913 he was auditor of the Southern Pacific with headquarters at San Francisco. In March 1913, he was promoted to deputy controller and transferred to New York and a month later was elected vice-president and controller which position he held until June, 1925, when he was elected vice-chairman of the executive committee of the Southern Pacific Company and of the several Southern Pacific Lines in Texas and Louisiana. The notable feature of his career has been his rapid promotion and the fact that he has served his company in such widely separated

places as Houston, Los Angeles, San Francisco and New York.

As an accounting officer, Mr. McDonald was for some years a leader in the activities of the Railway Accounting Officers Association, of which he is now an honorary member. Almost from the moment when he became the chief accounting officer of the Southern Pacific, he was made a member of the committee on general accounts, or committee of 25, and later was appointed chairman of that committee. He served as a member of the committee that met with the representatives of the Interstate Commerce Commission relative to the 1914 revision of the accounting classifications, the classifications now in effect.

In 1919 he was elected president of the Railway Accounting Officers Association. His administration of the association's affairs fell in that period when the



A. D. McDonald

termination of Federal control and the new conditions soon to prevail brought diverse and complex problems of paramount importance, as well as of a pressing nature from an accounting viewpoint. It is said that he contributed, in ungrudging measure, to the welfare, success and progress of the Railway Accounting Officers Association and that his ideas, as expressed notably in his address as president of the association, have widened the sphere of railway accounting as a science and increased its prestige.

A. D. McDonald was born at Oakland, Calif., on April 14, 1878. He was educated at the University of Notre Dame of which he is now a trustee. He became associated with the Southern Pacific as a clerk in the accounting department at Houston, Tex., in January, 1901. From 1904 to 1907 he was with the company at San Francisco. In the latter year he was appointed auditor of the Los Angeles Pacific Company, a Southern Pacific subsidiary, with headquarters at Los Angeles and a year later became auditor of the Pacific Electric which operates the extensive network of interurban lines in the Los Angeles area. In 1910, he was transferred back to San Francisco with the position of auditor of the Southern Pacific, then in March, 1913, was transferred to New York as deputy controller and a month later elected vice-president and controller. Since June, 1925, he has been vice-chairman of the executive committee of the Southern Pacific in charge of the New York office. Mr. McDonald is a director of the National Bank of Commerce in New York.

Henry M. Lull, newly elected executive vice-president "with substantially the same authority and duties as the late president," as the official announcement puts it, has for only a few weeks been in the position from which he is now promoted. Mr. Lull was formerly

chief engineer of the Southern Pacific Lines in Texas and Louisiana and was only recently promoted to the newly created position of assistant to the president. His photograph and sketch appeared at the time of this promotion in the *Railway Age* of November 27, 1925, page 1064.

Mr. Lull began his connection with the Southern Pacific Lines in the engineering department in San Francisco, in May, 1906, advancing through various positions until 1917, when he was appointed division engineer of the Southern Pacific Lines in Oregon. In September, 1920, he came to the Texas and Louisiana Lines as chief engineer, and occupied that position until his appointment on October 15, 1926, as assistant to the president of these lines.

During Mr. Lull's connection with the Texas and Louisiana Lines, an extensive program of improvement and development has been in progress. Many important additions have been completed, such as construction of the Dallas Belt Line; the Southern Pacific waterfront terminals at Clinton; the new Houston freight house recently completed; the Lantry Cutoff, an important line change in West Texas; large extensions and improvements to shops, roundhouses, and other facilities at El Paso, San Antonio, Houston, Dallas, Lafayette; levee protection work at New Orleans and Algiers; and the commencing of large freight house facilities at Dallas. Mr. Lull has also had a large part in planning the company's extensions into the Rio Grande valley, and in organizing and carrying out the construction work on this project. During this period he also had charge of the maintenance of the properties, which have been extensively improved by regrading and reinforcing roadbeds, application of slag and stone ballast to many hundred miles of track, heavy rail replacement, etc.



Wide World

A New British (Southern Railway) Locomotive, the "Lord Nelson," Leaving Waterloo Station, London, on Its Maiden Run on the Atlantic Coast Express



# St. Lawrence Waterway Recommended by Commission

*Construction is called "imperative" in report  
by Herbert Hoover*

WASHINGTON, D. C.

**C**ONSTRUCTION of the proposed St. Lawrence river shipway from the Great Lakes to the ocean is recommended as "imperative both for the relief and for the future development of a vast area in the interior of the continent," in a report submitted to President Coolidge on behalf of the United States St. Lawrence Commission by Herbert Hoover, Secretary of Commerce, chairman of the commission. It finds that the shipway should be constructed on the St. Lawrence route, rather than the Lake Ontario-Hudson route or the so-called "All-American" route, provided suitable agreement can be made for its joint undertaking with the Dominion of Canada; that the development of the power resources of the St. Lawrence should be undertaken by appropriate agencies; and that negotiations should be entered into with Canada in an endeavor to arrive at agreement on all these subjects, recognizing all the proper relations of New York to the power development.

Estimates by the Department of Commerce indicate that from 21,000,000 to 25,000,000 tons of traffic is at present available for such a waterway and the report says that this is under 4 per cent of the present tonnage carried by the American railway systems which now connect the lakes with the seaboard. The conclusions reached by the commission, as the result of the several investigations which have been made, are in part as follows:

## Mid-Continent Handicapped

The construction of a shipway of sufficient depth to admit ocean shipping from the Atlantic to the Great Lakes will lessen the economic handicaps of adverse transportation costs to a vast area in the interior of the continent. Within the United States, it embraces all or large portions of the states of Ohio, Indiana, Kentucky, Illinois, Iowa, Missouri, Kansas, Nebraska, North and South Dakota, Montana, Wisconsin, Minnesota, Michigan, Pennsylvania and New York. It includes a large part of Canada. Within this area, there are more than 40,000,000 inhabitants who gain their livelihood from its basic industries. It produces a vast surplus both from agriculture and manufactures, much of which demands long transportation. There is a reciprocal inflow of commodities from its neighbors.

These sections have always been under natural transportation disadvantages in the exportation and importation of commodities. But the building of the Panama Canal artificially created a still further dislocation of its competitive relations and beyond this the necessary increase in railway rates following the war have shifted greatly the economic position of the Mid-Continent to the great detriment of that area.

The problem has thus become one of wide importance, not only because of the fundamental advantages of elimination of great wastes in transportation costs, but also because of the necessity for re-adjustment of adverse competitive relations of all the industries and agriculture throughout the Mid-Continent.

This becomes apparent if we cease to think of distance merely as a matter of miles and consider it in terms of cost. If we take as a unit of measurement the cost in cents of carrying a ton of staple goods at present rates, taking the cheapest route in each case, we find that before the war, New York was 1,904 cents away from San Francisco, while now it is only 1,680 cents away. Chicago, which was 2,610 cents away from the

Pacific Coast before the war, is today 2,946 cents away. In other words, Chicago has moved 336 cents away from the Pacific Coast, while New York has moved 224 cents closer. A similar calculation will show that in the same period, since ocean rates have remained about the same, Chicago has moved 594 cents away from the markets of the Atlantic seaboard and South America. The same ratios apply to the other Mid-West points.

## Farmers Will Be Benefited

The increased transportation costs to world markets from the Mid-Continent have had serious results to agriculture. The rate increases affecting this section of from 6 to 18 cents per bushel upon grain have not been accompanied by similar increases in many agricultural countries which compete with it, since they possess greater accessibility to the seaboard, and sea rates are about the same as before the war. Thus, this increase in American rates has been in large degree a deduction from the receipts of farmers in the Mid-Continent. With the completion of such a shipway as the St. Lawrence, the freight rates on grain to world markets would be substantially reduced and as a consequence the price levels of all grain in the lakes transportation area would be increased accordingly. Much the same type of economic reaction would affect other commodities and industries. It has been estimated that the values in a single year to the farmers alone would equal the capital cost of the waterway. Thus the economic importance of the improvement would be far greater than the savings made upon the actual tonnage transported, important though that would be.

The interior states which are affected by this situation have not been neglectful of the benefits to be derived by the bringing to them of ship transportation to the sea. Eighteen of them have associated together by acts of their legislatures, under the name of the Great Lakes-St. Lawrence Tidewater Association. They represent nearly two-fifths of our population. They have made their own independent investigation and have concluded and declared that the opening of the Great Lakes to ocean-going vessels through the St. Lawrence is a major public necessity in the economic interest of their communities.

There can be no disagreement in the opinion that this section of the United States is entitled to an equalization in transportation advantages as far as possible, nor as to the benefits which would inevitably flow to it if ship access to the ocean is afforded.

## Several Routes Considered

Three different routes for such a shipway have been put forward:

(a) By reconstruction of the present canal from Lake Ontario to the Hudson, making use of the new Welland canal now being constructed by the Canadian government to connect Lake Ontario and Lake Erie. The United States has treaty protection of equal treatment in the use of the Welland.

(b) By developing an "All American" route, which would include the Lake Ontario-Hudson project plus a new ship canal on the south side of Niagara which would duplicate the new Welland canal.

(c) By utilizing the St. Lawrence river, as a joint undertaking with Canada.

Both the initial and ultimate depth of the shipway involves many technical and financial questions. A depth of 30 feet in the permanent structures will provide for almost any contingency for many years to come and for purposes of comparison in costs a depth of canals which will permit of ships of 25 feet of draft has been adopted. Such a depth will admit 88 per cent of all ships now entering American ports. After making full allowance for

the seasonal variations in the volume of traffic to be handled, the capacity of a waterway of this depth, with a chain of single locks, is estimated at 30,000,000 tons per annum. The capacity can be increased to any reasonable amount that may be desired by the construction of additional locks paralleling those first installed.

It is estimated by the Department of Commerce that the following tonnages are at present available for transportation of which, say 80 per cent, represents exports and imports as distinguished from internal traffic.

	Ontario-New York Route	St. Lawrence Route
Minimum estimate .....	15,000,000 tons	21,000,000 tons
Maximum estimate .....	20,000,000 tons	25,000,000 tons
Median .....	17,500,000 tons	23,000,000 tons

The reports of the United States Engineers of December 6, 1926, estimate the cost of constructing the Lake Ontario-Hudson Route at \$506,000,000; the All-American Route at \$631,000,000 (both estimates without interest during construction). No consequential relief by water power can be developed upon these routes. The net cost to the joint governments of the improvement of the St. Lawrence route upon procedure indicated below would be upon the joint engineers' estimates of between \$123,000,000 and \$148,000,000, from which some further reductions should be made from further realization upon hydro-electric power.

#### Hydro-Electric Power Possibilities

The development of the St. Lawrence waterway is necessarily also a development of the huge hydro-electric power from the great rapids which now obstruct navigation on the river. The complete practicable power development of the river will provide a total of about 5,000,000 installed h.p., of which about 2,250,000 lies in the upper rapids along the international section between New York state and the province of Ontario. This is not only the largest possible hydro-electric power development upon the continent, but the reports of the engineers indicate that the capital outlay per horsepower is less than most of the hydro-electric installations now in progress in the United States. The inevitable development of the river for power would in itself compass the major construction for the shipway since the dams necessary for development of power create a series of pools in place of the present rapids which, with the supplement of locks and short canals, become the shipway. Their development will eventually create a shipway on this route even if other routes were undertaken.

There is estimated to be a requirement in the province of Ontario and in New York and New England states (by the time of completion) for all the power which can be developed in the international section. Various private or public bodies are now seeking the privilege of this development and we may assume for purposes of estimation that its construction can be undertaken outside of the federal and Dominion governments. The cost of providing the locks and canals around this power development in the International Section (assuming proper enlargement of channel for winter operation of power) is estimated at from \$22,400,000 to \$34,000,000, depending upon details of the plans as to whether two dams or one are constructed. The improvement of the river from Lake Ontario down to these power dams and below this point as far as the lower rapids is estimated at less than \$3,000,000. Thus the development of the power in the International Section with the above comparatively minor expenditure, would carry the shipway a total of 141 miles, out of the total of 183 miles from Lake Ontario to Montreal, or taking it to within 42 miles of tidewater.

This last 42-mile stretch embraces the two lower sets of rapids and the full power from these sources apparently will not be in economic demand at so early a date, and therefore the construction of the shipway could either be undertaken around these rapids independently of power development, or by adopting plans which would give some 400,000 immediate h.p. and will provide important preparation for further installment of 2,350,000 h.p. later on. The first alternative should cost about \$97,500,000 and the second about \$161,000,000. From the latter there must be deducted the income value from 400,000 h.p. which would be equivalent to a capital value of at least \$50,000,000 and beyond this the completion of the power development would further realize values which should further reimburse expenditure upon this section. The second alternative should provide rather better navigation and is recommended by the Joint Board of Engineers.

#### Cost of St. Lawrence Project

Thus the total investment in the St. Lawrence by the joint governments on the above basis of procedure would be from \$123,000,000 to \$198,000,000 depending upon details of the plan. The latter sum, previously pointed out, would be reduced to an effective net of \$148,000,000 from immediate power income and still further reduced by the returns from future power development. There are other alternative methods of handling the problem but this will serve to illustrate the costs. If other agencies than the federal and Dominion governments were not able to undertake the construction of power dams in the International section, and if it were necessary to consider their installation as part of the financial project, the returns from the power developed should reimburse its cost and perhaps something in addition. The whole St. Lawrence undertaking is, of course, a joint one between the United States and Canada. There is as yet no understanding between the two countries as to the proportion in which this cost would have to be shared, but obviously the share of either government would be less than the totals shown above which would also be subject to reduction through further power realization.

It is estimated that maintenance plus interest at 4½ per cent on the All-American route would be \$36,000,000 per annum, upon the Ontario-Hudson route \$28,770,000 upon this plan of development of the St. Lawrence route, say \$10,000,000 after deduction of power returns from power actually developed as above. These charges applied to the estimated annual medial tonnages is as follows:

All American .....	\$2.06 per ton
Lake Ontario-Hudson .....	1.64 per ton
St. Lawrence .....	.43 per ton

There are other important considerations in comparison of routes. The amount of restricted and therefore retarded navigation through actual canals would be 137 miles on the All-American route, 128 miles on the Ontario-Hudson route, 21 to 25 miles on the St. Lawrence. The operating season free from ice is practically the same. The St. Lawrence route requires nine locks compared with 20 on the Ontario-Hudson and the St. Lawrence route will be obstructed with 8 bridges compared with 54 on the Ontario-Hudson. The actual distance by the St. Lawrence from lake ports to Northern European points would be less by 625 miles as compared with the Ontario-New York route. The actual distance from lake ports to New York would be greater by 1,550 miles and to South Atlantic points from 540 to 1,350 miles by the St. Lawrence, but these items are more than compensated for by better navigation and lesser fixed charges.

It is estimated that the construction of the waterway upon the St. Lawrence will require 8 years, but 10 years may be assumed as a minimum period even if all international questions, legislation, administrative and financial problems were rapidly overcome.

While the commission deprecates the injection of the idea that military advantages by either route are to be seriously considered in connection with any relationships with our most friendly neighbor, the Chief of Engineers has discussed this feature as follows: "The military advantages of the proposed waterway across the state of New York are not sufficient greatly to affect the consideration of a matter involving hundreds of millions of dollars. It will be noted that many points of both routes are so close to the border as to make them subject to possible destruction in case of war."

On the American side the state of New York has a special interest in the power developments of the international section and the coordination of these improvements with the state should be undertaken. Owing to the navigational and international character of the river the federal government has an interest and must necessarily assent to and negotiate power development questions from the American side.

#### Effect on Railroads

There has been some feeling that the construction of the St. Lawrence waterway will injure the interests of our eastern states by decreasing terminal business of lake and seaboard cities; will divert traffic from American railways and endanger our commercial and financial control of American exports and imports over this route. Of first importance is the fact that the total estimated tonnage available today for the waterway amounts to under 4 per cent of the present tonnage carried by the American



Railway systems which now connect the lakes with seaboard. It comprises less than 12 per cent of the sea shipments now moving through the affected American seaports. The natural increase in population and traffic would quickly recover such amounts, theoretically before the earliest possible completion of the waterway. Our facilities are already much taxed and another route does not mean a duplication of capital outlays. It is certain that American cities of which New York is the centerpoint, would remain the financial and commercial centers of America's foreign trade regardless of the route of traffic. It may be observed that the completion of the Welland canal now in construction will divert some tonnage from present routes and terminals to lower Lake Ontario and that the development of the power on the borders of New York state will still further divert tonnage by opening this route 141 miles further to within 42 miles of tide-water at Montreal.

In the wider view the increased prosperity of the Mid-Continent, the relief of many of their present economic difficulties and development of huge water power for stimulation of industry and commerce in New York and New England shall add to the prosperity of the country as a whole and thereby benefit every citizen and every city.

## Stationery Costs Come High

THE total amount charged to the stationery and printing account on the Missouri Pacific last year was \$815,669, according to an analysis of J. T. Van Horn, the stationer, in the recent issue of this company's employee magazine. The accompanying table shows that 19,831,000 various styles of paper fasteners were used, the total cost of which was \$3,925.80.

Item	Quantity used	Cost
Pins	15,285,000	\$1,928.50
Gem clips	2,000,000	420.00
Flat head, round head, O. K. and Ketchikan paper fasteners	2,546,000	1,577.30
Carbon paper, sheets	3,670,500	20,297.00
Typewriter ribbons	18,720	3,330.00
Pencils	518,976	9,282.15
Pencil extenders	8,712	272.25
Pen points	390,528	1,472.60
Pen holders	6,912	120.50
Letter size 8½x11 second sheets	17,300,000	10,212.00
Note size 5½x8½ second sheets	3,425,000	1,216.50

The consumption of typewriter carbon was 1,322,000 sheets, which is equivalent to 71 sheets of carbon for each typewriter ribbon furnished. In addition to the pencils shown in the table 1,600 automatic pencils were sold direct to employees during 1925, for which the company furnishes leads. The stationer also furnished 8,712 pencil extenders, an average of one pencil extender for each 59½ pencils. It cost the Missouri Pacific \$455 for 25,406 erasers to correct mistakes made with 518,976 pencils, an average of one eraser used to every 20 pencils consumed. Approximately 57 pens were furnished with each penholder. Two years ago the use of three forms of repeat envelopes was begun. The consumption of the various forms of seal envelopes used for interoffice correspondence during 1925 was 10,959,000. During this same period, but 230,000 repeat envelopes were used. In other words, it was necessary to seal 47 out of each 48 envelopes used.

MARTIN J. CAPLES, engineer of maintenance of way of the Columbus, Sandusky & Hocking, has been appointed trainmaster of that road in addition to his previous duties.—*Railway Age*, January 10, 1902.

AN OTTAWA CORRESPONDENT writes that thus far the tearing-up of rails on Canadian railroads to furnish track material for use in France has been confined mainly to yards and sidings on government lines. Operations on privately-owned roads will begin later.—*Railway Age Gazette*, January 12, 1917.

## Looking Backward

### Fifty Years Ago

Cornelius Vanderbilt, president of the New York Central & Hudson River and of the Lake Shore & Michigan Southern, died at his residence in New York City on January 4, at the age of 82 years. Commodore Vanderbilt obtained full control of the New York Central in 1866 and at the annual election in 1867 deposited the entire vote, representing thirteen millions of stock. His subsequent purchases of the stock of this road were at the rate of about two million dollars a year.—*Railroad Gazette*, January 12, 1877.

The Texas & Pacific is reported to have made terms with the Southern Pacific as a result of which the latter company will no longer oppose the granting of government aid to the former road and a new bill for this purpose is to be brought into Congress directly. The terms of the agreement doubtless provide that there shall be but one railroad built between the Colorado river and the Pacific, and probably that the Texas & Pacific shall have running rights, or other privilege of use, of the line of the Southern Pacific over this district.—*Railway Age*, January 11, 1877.

### Twenty-Five Years Ago

The completion of the Canadian Northern from Port Arthur, Ont., to Winnipeg, Man., was celebrated on December 30, 1901.—*Railway Age*, January 10, 1902.

C. H. Markham, heretofore assistant freight traffic manager of the Southern Pacific, has been elected vice-president of the Houston & Texas Central.—*Railroad Gazette*, January 10, 1902.

The agreement to issue no exchange passes appears to be well maintained thus far. The officers of the roads west of Buffalo and Pittsburgh evidently have been more inclined to relax the agreement than those farther east. Traveling agents will be expected to make better use of the telephone and telegraph and thus save some of their journeys.—*Railroad Gazette*, January 10, 1902.

The attorney-general of the State of Minnesota filed in the United States Supreme Court a complaint against the Northern Securities Company, asking to have that company enjoined from carrying out the consolidation of the Great Northern and the Northern Pacific. The bill is the first legal move in the campaign of Governor Van Sant to annul the union of the two roads.—*Railroad Gazette*, January 10, 1902.

### Ten Years Ago

In the Chicago switching district there are standing on the tracks approximately 6,000 eastbound cars, which are blocked by embargoes placed by eastern railroads. A Chicago terminal railroad, which had 900 eastbound cars on its tracks on its tracks December 26, reduced the number to 450 by December 30. On the contrary, another road reported that the situation was growing steadily worse, and that on December 30, it had 1,300 cars on its Chicago tracks consigned to eastern points.—*Railway Age Gazette*, January 12, 1917.

President Wilson emphasized his intention of carrying out a program of additional railroad legislation to supplement the Adamson eight-hour law when he visited the capitol for a conference with Senator Newlands, chairman of the Senate Committee on Interstate Commerce. The committee has before it tentative bills prepared by Senator Newlands to prohibit railroad strikes pending an investigation and to empower the President to take over the railroads in case of military necessity.—*Railway Age Gazette*, January 12, 1917.

## Odds and Ends of Railroadng

The smoking car formerly was assumed to be for "men only," but railroads operating suburban service out of Chicago find that, despite everything they can do, the fair sex now persists in increasing numbers in riding in the smoking cars. There is no changing in this changing age that does not affect railroads.

Over a short news item telling of the sudden death of an engineman in the cab of his locomotive, a New York newspaper printed the head "Engineer Dies at the Wheel"—evidence possibly of the insidious filtration of the automotive point of view into places of strategic importance in the molding of public opinion.

The motorist's variant of an ancient hymn:

Said Ca-a-sey Jo-ones just befo-ore he died,  
There's two-o more cars that I'd li-ke to ride.  
The fireman sai-aid, Wha-at cou-ould they be,  
Oh a Fo-ord coupé-é and a Mercedee\*

\* Poetic license for Mercedes.

An interesting contrast between the modern and prehistoric worlds was unearthed near Ponca City, Okla., recently by contractors building a new line of the Chicago, Rock Island & Pacific. The workmen, while digging through the sandy hill along the right-of-way, came upon the bones of a prehistoric animal estimated to have been hidden for 30,000 years until the march of progress unearthed them.

One of the most peculiar of all freight claims was settled recently in Texas. A shipper of live snakes filed a claim for \$500 damages to a carload of this commodity, and if reports are to be believed he got it. It is said that the snakes were loaded in the car next to the caboose and that there were so many curves on this particular railroad that upon arrival at destination it was found that the jerking of the car had snapped the heads off all the snakes.

It was a merry Christmas for four little Chicago colored boys. These youngsters, Alwin and James W. Scott, Rowland Hardin, and Charles Stevenson, were presented with a complete assortment of tools by John Maloney, assistant general passenger agent of the Wabash. The gift was in recognition of the work of the boys in constructing a miniature Wabash Limited of such materials as banana baskets, grocery boxes, fruit crates, pans, cans, stove pipe, garden hose, and the head of a guitar.

One of the minor exasperations of business is the receipt of letters bearing signatures that are illegible. This writer has just had two on his desk in the same day that will remain forever unanswered because the signatures on them are scrawls that conceal the identity of the writers as completely as if they were in Chinese. The *Railway Age* recently had to apologize for mistakenly attributing to a certain railway officer the authorship of an article it published, because it was erroneously assumed that the name printed at the top of a letter was the same as that written at the bottom. Every railway ought to have a rule requiring signatures to be either written legibly or typewritten as well as hand-written.

According to a recent issue of the *Outlook*, quite a number of railway travelers are complaining about the difference in the diameter of the wheat cakes served in the dining cars operating on various railroads. The complaining travelers claim that the diameter of wheat cakes should be made standard, and it is suggested that the question be referred to the Interstate Commerce Commission or be made a subject for Congressional investigation. According to reports, wheat cakes and sausage of standard New England design are served each morning at the White House. Perhaps the President will show sufficient in-

terest in the welfare of the railway traveler to suggest to Congress that standardization of wheat cakes be considered along with the Pullman surcharge bill.

### Deplorable Decline in Sartorial Splendor Among English Railway Uniformed Employees

(From the Times-London)

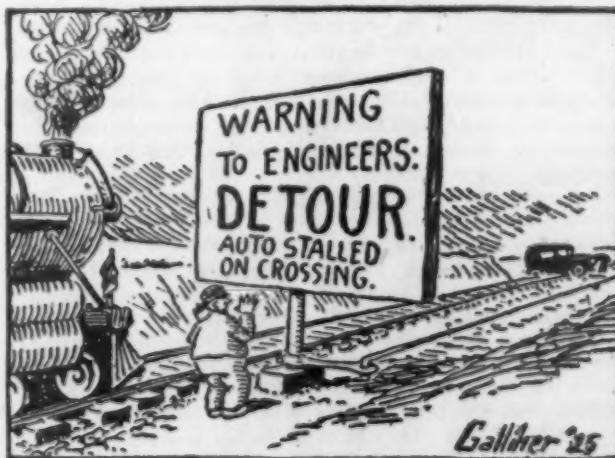
The red tie universally worn by the men of the operating section on the Southern Railway is to be dispensed with on and after January 1. Its place will be taken by a blue tie which the railway company will issue.

The red tie was worn for many years as part of the uniform of railway servants of the London & South-Western Company, and when the amalgamation was effected it was adopted for the operating grades of all the railways which formed the new Southern group.

The tie came to be adopted in the following way. A director was traveling on the old London & South-Western Railway system some years ago when a difficulty arose about stopping the train, and he conceived the idea that every man engaged in operating traffic should wear a bold red tie so that in case of emergency it could be taken off and used as a danger signal. The idea was adopted and became part of the official uniform of porters and other traffic grades.

Originally the tie was issued in the form of a neckerchief nearly a yard square, but a few years ago a piece of red material cut in the form of a simple tie was substituted. Few of the men ever used the neckerchief material for the purpose for which it was given to them, a railway man told a Press representative last night. "It was commonly cut up for making overalls and other garments for children," he added. "Windows of railwaymen used to knit red ties and sell them to us as cheaply as threepence and sixpence each. I am glad that the company is doing away with the red tie, and I think most of us are. Many of the men objected to having to wear the tie and got into trouble for not doing so. You know what Moscow has done for the country. We have been insulted by people who thought we were 'Reds,' and during the general strike the tie caused a good deal of trouble. To some it was like a red rag to a bull. I know the red tie was supposed to be used in case of necessity as a danger signal, but of late years it has not been large enough for that. When the neckerchiefs were worn they might have served that purpose, but of recent years the ties have come down to mere strips."

### The Motorist's Dream—Interlocking for Highway Grade Crossings



From *Copper's Weekly*



## Communications and Books

### A Criticism of the Straight Line Method of Depreciation

CHICAGO

#### TO THE EDITOR:

The tentative draft of the new I. C. C. accounting classification published in your December 4 issue, and the commission's recent order to institute depreciation accounting, commented upon in the December 11 number, are somewhat disappointing in the treatment of depreciation.

The order prescribes the straight line method of depreciation notwithstanding the fact that a fund or reserve built up by such computation will impound a sum much in excess of the maximum amount ever to be required for replacements in a railroad which does not contemplate liquidation. This fact need not be enlarged upon here but the reader may find it more clearly stated in paragraph 13 of "Cost of Reproduction Less Depreciation" in the protest to tentative valuation of the New York, New Haven & Hartford.

It is unfortunate that the order does not embody a method of computing the depreciation fund or reserve so that the desired result will be attained. This result is, of course, the current provision of a fund or reserve just sufficient to meet all renewals of long life depreciable property whenever such renewals mature.

Contrary to general opinion it is not a difficult matter, except for the volume of detail, to determine just what the amount of this fund or reserve should be at any given date. To make such test at balance sheet date, it would be necessary to compile the various sums required for renewals (both first and recurring), at their estimated maturities, of the various property units which make up the railroad. With these data before us it is now possible to ascertain for each successive year after balance sheet date the total sum of money required for any given year's replacements. By inspection, the year of maximum requirements of money for future replacements becomes apparent. With the year of maximum money requirements thus revealed and the amount of the annual provision for replacements fixed, the required fund or reserve as of balance sheet date is easily determined. It is equal to the difference between the cost of all renewals during the period from balance sheet date to the year of maximum requirements and the product of the number of years in that period times the annual provision.

R. C. KRAMER.

Valuation Accountant, Chicago, Milwaukee & St. Paul.

### New Books

*Freight Traffic Red Book*, By H. G. Williams and C. J. Fagg. 688 pages. 8 in. x 11 in. with large folded map. Bound in flexible fabrikoid. Published by the Traffic Publishing Company, 150 Lafayette Street, New York City. Price \$6.00, including supplemental service.

This well-known book appears in its seventh annual edition. A number of new subjects have been added, including private car line operation, express storage rules and regulations, and considerable statistical matter. The table of contents includes about 60 items with

very few duplications, and the subjects include rate factors, freight classification, demurrage, storage, freight claims and warehousing; the Transportation Act and numerous other laws; and, in general, all current information desired by shippers of freight. The publishers' claim, that the book is as handy as a dictionary, seems to be very well founded. The editors promise to give to purchasers prompt information (monthly) of important acts of the Interstate Commerce Commission and other authoritative bodies which may call for modification of material printed in the book.

### Books and Articles of Special Interest to Railroaders

(Compiled by Elisabeth Cullen, Reference Librarian,  
Bureau of Railway Economics, Washington, D. C.)

#### Books and Pamphlets

*Caravans of Commerce*, by Isaac F. Marcossou. An informing book on the commodities of commerce, where they originate, where they are used, and why, and how they are transported. 331 p. Pub. by Harper & Bros., New York and London, \$3.

*Motor Bus and Motor Truck Operation*. Statistical summary of answers made by Class I railways to questionnaire in I. C. C. Docket No. 18300. 50 p. Issued by Bureau of Statistics, Interstate Commerce Commission, Washington, D. C. Apply.

*An Outline of the Organization and Operation of the Employees' Representative System of the Government Railways of Japan*. 43 p. Pub. by the Labor Section, Minister's Secretariat, Department of Railways, Government of Japan, Tokyo, Japan. Apply.

*Second South American Railway Number*, by Railway Gazette. The first South American railway number on Argentina was noted in the booklist of December 11, 1926. This one, dated Dec. 6, 1926, special issue, describes the other railways in South America, and has many illustrations and maps. 196 p. Pub. by Railway Gazette, London, England. 2 shillings, sixpence.

*Statistical Railroad Summary 1920-1926*. Issued as supplement No. 5, 1926, to accompany Railroad Data of Dec. 17, 1926. 2 p. Pub. by Committee on Public Relations of the Eastern Railroads, New York City. Apply.

#### Periodical Articles

*Dynamometer Cars*, by Ralph P. Johnson. Illustrated description of the latest types, with mention on page 36, of the one built by George Stephenson and Nicholas Wood in 1918. *Baldwin Locomotives*, January, 1927, p. 35-43.

*The Holding Company in American Public Utility Development*, by Prof. M. C. Waltersdorf. What kinds of holding companies are functioning, and their contribution to modern utility expansion. *Economic Journal*, December, 1926, p. 586-597.

*It's Taxes First with the Railways*, by Philip G. Otterback. "Checks that go to investors for railroad earnings are less than those which government collects for various taxes." *Nation's Business*, January, 1927, p. 24-25.

*The Locomotives of the Chicago, Burlington & Quincy Railroad*, by Paul T. Warner. Part 2 describing locomotives from 1905 to present. Part 1, on locomotives to 1905, was mentioned in the booklist of Oct. 2, 1926. *Baldwin Locomotives*, January, 1927, p. 2-21.

*Prevalence of the 5-Hour Day in American Industry*.—A survey of present conditions and various proposals. *Monthly Labor Review*, December, 1926, p. 1-17.

*The Investor and the Scientist*. An editorial on how certain discoveries in scientific research have changed the status of industries and on the necessity for further scientific investigation in this country. *Commercial & Financial Chronicle*, November 27, 1926, p. 2704-2705.

# NEWS of the WEEK



THE ANNUAL MEETING of the American Association of Railway Advertising Agents will be held in Chicago on January 18.

THE SENATE on December 22 confirmed the President's re-appointment of Hywel Davies as a member of the United States Board of Mediation for a five-year term.

THE AMERICAN SOCIETY OF SAFETY ENGINEERS will hold its annual meeting at Cafe Boulevard, 41st Street, New York City, on Tuesday evening, January 18, at 6:30, with a dinner dance.

MOTOR VEHICLES as Railroad Auxiliaries is to be the subject of an address to be delivered by Howard F. Fritch, passenger traffic manager of the Boston & Maine, before the New England Railroad Club on January 11 at its regular monthly meeting; Copley-Plaza Hotel, Boston.

THE TREASURY DEPARTMENT has sent a letter to both houses of Congress enclosing a draft of a bill appropriating \$48,852 to enable the Secretary of the Treasury to refund that amount of interest said to have been collected erroneously from certain railroads on overpayments of the amount of their guaranty for the six months period following the termination of federal control.

PURSUANT TO THE policy adopted January 13, 1911, that the term of office of the chairman of the Interstate Commerce Commission shall be filled from year to year in the order of seniority of service, Commissioner John J. Esch has been unanimously elected chairman to serve from January 1, 1927, for the ensuing year. Commissioner Esch was appointed to the commission in 1921 by President Harding for the term expiring December 31, 1927.

THE PUBLIC SERVICE COMMISSION of New York has ordered the discontinuance of regular agencies at Stormville on the Central New England, and at Jackson Corners and Stanford on the same road. At Stormville a caretaker will be put in charge of the station building; at Jackson Corners the business will be managed by the agent at Silvernails; and at Stanford, there will be a caretaker and also the station will still be represented as an "open

station" on the tariffs. The caretaker will be at the station one hour in the forenoon and one hour in the afternoon, and notices are to be posted containing regulations as to freight shipments.

## New Executive for Associated Business Papers

Jesse H. Neal, who for eleven years has served as executive secretary of the Associated Business Papers, has resigned, effective January 1. The executive committee of the A. B. P. has created a new office for the association, that of managing director, and Frederick M. Feiker has been appointed to this office. After January 1 the headquarters of the A. B. P. will be located at 52 Vanderbilt avenue, New York.

## The Tie Producers' Association

The National Association of Railroad Tie Producers will hold its ninth annual convention at the Hermitage hotel, Nashville, Tenn., on January 27-28. The program is as follows:

THURSDAY AFTERNOON, JANUARY 27  
Address of president and reports of officers and committees.  
Report on General Conditions in the Tie Industry by officers from various districts.

THURSDAY EVENING  
Annual dinner.

FRIDAY MORNING, JANUARY 28  
Paper on Tie Production Costs, by G. C. Groetter, timber engineer, Western Tie & Timber Company, St. Louis, Mo.  
Paper on Philosophical Engineering and Cross Ties, by O. H. L. Wernicke, president, Pine Institute of America, Inc., Gull Point, Fla.  
Paper on General Business Conditions, by Archer Wall Douglas, vice-president, Winchester-Simmons Co., St. Louis, Mo.

FRIDAY AFTERNOON  
Paper on The Tie Producers' Part in the Consumers' Problems, by J. B. Hill, president, Nashville, Chattanooga & St. Louis, Nashville, Tenn.  
Paper on Future Sources of Cross Tie Supply, by E. A. Sterling, eastern manager, James D. Lacey & Co., New York City.

## Fuel Record for Ten Months

Class I railroads in the first ten months of 1926 expended \$265,196,749 for fuel for road locomotives in freight and passenger train service (charged to operating expenses) according to the Interstate Commerce Commission's monthly statement of railroad fuel statistics. This compares

with \$270,752,209 expended in the corresponding period of the previous year. The average cost of coal per ton was \$2.61, as compared with \$2.73 the year before, and the average cost of fuel oil per gallon was 2.93 cents, as compared with 3.19 cents. The roads consumed 82,482,248 tons of coal, as compared with 79,409,289 in the corresponding period of 1925, and 1,702,777,400 gallons of fuel oil, as compared with 1,699,628,580.

## Terminal Engineers to Hear About B. & O. Bus Service

At the next regular meeting of the Society of Terminal Engineers to be held on next Tuesday evening, January 11, at 8 p. m. at 29 West 39th Street, New York City, M. F. Steinberger, special engineer of the Baltimore & Ohio, will discuss the subject of railroad terminal bus operation.

## Baltimore & Ohio to Run Locomotives Through to Jersey City

The Baltimore & Ohio has filed with the Interstate Commerce Commission an application for authority to acquire trackage rights over the Reading and the Central of New Jersey for the operation of its passenger trains between Philadelphia and Jersey City with its own motive power and crews. Under an agreement of 1898 the Baltimore & Ohio trains have been hauled over these lines by the two carriers each on its own responsibility, except for the period from April, 1918, to August 29, 1926, when they were run to and from the Pennsylvania station in New York City. It is now proposed, the application says, to amend the contract of 1898 so as to permit the Baltimore & Ohio to operate into Jersey City on its own responsibility. The contracts with the Reading and the Central of New Jersey provide for the payment by the Baltimore & Ohio of \$1.25 per train mile, including light engine mileage; for a division of revenues on local traffic, and for payment for the use of the Central of New Jersey terminal facilities in proportion to use, with a minimum of \$200,000 a year, in addition to payments for the ferry service between Jersey City and New York.



### Consolidation Legislation Considered in Committee

Consideration of the Parker railway consolidation bill, on which hearings were held before the House committee on interstate and foreign commerce last Spring, was begun by the committee at a meeting on January 5 and is to be continued, but there is yet some doubt as to whether the committee will attempt to report out the bill at this session. The Senate committee on interstate commerce has decided to consider the Fess bill, which is the Parker bill with some modifications, at a meeting on January 12, and an effort will be made to have the bill reported to give it a status on the Senate calendar equal to that of the Cummins bill, which was reported at the last session.

The House committee had agreed at a previous meeting that it cannot consider at this session the Mayfield bill passed by the Senate at the last session to omit the requirement of a certificate from the Interstate Commerce Commission for railway extensions approved by state authorities.

### The Wood Preservers' Association

The program for the twenty-third annual convention of the Wood Preservers' Association, which will be held at the Hermitage hotel, Nashville, Tenn., on January 25-27, is as follows:

#### TUESDAY MORNING

Opening business.

#### TUESDAY AFTERNOON

Report of Committee on Preservatives.  
Paper on Some Experiments on the Toxicity of Inorganic Salts; by E. Bateman, chemist in forest products, Forest Products Laboratory, Madison, Wis.  
Report of Committee on the Treatment of Car Lumber.  
Report of Committee on the Treatment of Fir Lumber.  
Paper on the Relation of Temperature and Pressure to Penetration of Creosote into Wood, by J. D. McLean, engineer in forest products, Forest Products Laboratory, Madison, Wis.  
When is Rot Not Rot? by W. H. Leng.

#### WEDNESDAY MORNING

Report of Committee on Retailing Treated Forest Products.  
Paper on The Factors Governing the Performance of Preservatives, by E. Bateman, chemist in forest products, Forest Products Laboratory, Madison, Wis.  
Report of Committee on Lumber, "Trunking and Capping."  
Address by W. H. Courtenay, chief engineer, Louisville & Nashville, Louisville, Ky.  
Observations on Wood Preservation in Europe, by George M. Hurt, in charge of wood preservation, Forest Products Laboratory, Madison, Wis.  
Report of the Service Bureau Board.

#### THURSDAY MORNING

Report of Committee on Material Handling.  
Report of Committee on Tie Service Records.  
Report of Committee on the Non-Pressure Treatment of Poles.  
Report of Committee on Pole Service Records.  
Report of Committee on Post Service Records.  
Report of Committee on Steam Treatments.  
Closing Business.

### Report on Collision at Fort Wayne

W. P. Borland, director of the Bureau of Safety, has reported to the Interstate Commerce Commission on a side collision between a passenger train and a freight which occurred at the intersection of the New York, Chicago & St. Louis and the Pennsylvania near Fort Wayne, Ind., on November 16, about 7:48 p.m., when east-bound passenger train No. 4 of the first named road ran into a standing freight

of the Pennsylvania, which was occupying the crossing. The damage appears not to have been great and no person was killed, though three employees were injured.

The collision evidently is given prominence because it occurred at a point where the approach signals had connected with them automatic train control apparatus. The train control system extends from the outskirts of Chicago to automatic block signal 373 which is located 400 ft. west of the crossing at which the collision occurred. Automatic signal 374 is located 4,600 ft. farther west. The track circuit controlling signal 373 is looped around the Pennsylvania crossing. There is no interlocking at the crossing, train movements being governed by a board on which there are two red lights; the board in a horizontal position gives right of way to the New York, Chicago & St. Louis. All eastbound trains are required to stop at a fixed board situated a short distance west of the crossing and to proceed only on signal from the switch tender.

The engineman of No. 4, who has served as engineman 23 years and on this train for ten months, when asked to explain the cause, replied that it was misjudgment of speed, together with the condition of the rails; he also thought that at an uneven place in the track, his hand may unconsciously have moved the brake handle from lap to holding position releasing the brakes so quietly that he did not notice it.

Approaching signal 374, the engineman operated the forestalling feature of the automatic train control; and the inspector in his conclusion says: "Had this device been allowed to function, automatic application of the brakes would have occurred and the train would probably have approached the crossing at low speed under full control. For his failure thereafter to control the speed of the train, there appear to be no mitigating circumstances."

### Railway Revenues and Expenses

Class I railroads in November had a net railway operating income of \$114,897,288, which for that month was at the annual rate of return of 5.08 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In November, 1925, their net was \$107,153,689, or 4.84 per cent.

Operating revenues for November amounted to \$561,256,455, compared with \$533,141,385 in November, 1925, an increase of 5.3 per cent. Operating expenses totaled \$402,652,772, an increase of 4.7 per cent. Taxes amounted to \$35,108,192, an increase of \$3,315,005, or 10.4 per cent.

Eighteen Class I railroads operated at a loss in November, of which nine were in the Eastern district, one in the Southern district and eight in the Western district.

For the first eleven months in 1926 the net railway operating income amounted to \$1,151,604,395, at the annual rate of 5.24 per cent, as compared with \$1,045,325,037, or 4.86 per cent, for the corresponding period of 1925. Operating revenues for the eleven months amounted to \$5,928,193,551, an increase of 4.6 per cent. Operating expenses totaled \$4,311,599,674, an increase of 2.8 per cent.

Net railway operating income by dis-

tricts for the first eleven months, with the percentage of return based on property investment on an annual basis, was as follows:

New England Region.....	\$42,562,685	5.08%
Great Lakes Region.....	207,485,754	5.54
Central Eastern Region....	245,590,454	5.42
Pocahontas Region.....	83,478,819	9.23
Total Eastern District..	579,117,712	5.78
Total Southern District..	149,879,803	5.65
Northwestern Region.....	125,466,722	4.03
Centralwestern Region....	205,146,770	4.90
Southwestern Region.....	91,993,388	4.57
Total Western District..	422,606,880	4.54
UNITED STATES.....	1,151,604,395	5.24

The net railway operating income for the Class I railroads in the Eastern district during the first eleven months totaled \$579,117,712, at the annual rate of 5.78 per cent.

For the Southern district the net railway operating income was \$149,879,803, at the rate of 5.65 per cent.

Returns complete, except for the Kansas, Oklahoma & Gulf, showed that the Class I railroads in the Western district had a net of \$422,606,880, at the rate of 4.54 per cent.

### Canadian Roads Do Well in November

Canadian Pacific operating figures for the eleven months of 1926 show an operating net of \$43,328,944, the second largest on record, having been exceeded only once, in 1916, when the net was \$45,455,070. The net for November, 1926, was \$6,749,722, the best showing for any November in the railway's history.

The following tables show the gross earnings, operating expenses and net for the month of November, and the eleven months ending with November, with comparisons:

	1926	1925	Increase
Nov. ....			
Gross ....	\$21,524,116	\$19,294,184	\$2,229,931
Oper. ....			
Exp. ....	14,774,393	13,046,149	1,728,243
Net .....	6,749,722	6,248,034	501,687
Eleven months—			
Gross .....	180,233,610	163,537,460	16,696,150
Oper. ....			
Exp. ....	136,904,666	128,209,477	8,696,189
Net .....	43,328,944	35,327,983	8,000,960

Canadian National gross earnings for the 11 months of 1926 ended November 30 totaled \$242,854,988, while in the same period the operating expenses amounted to \$201,403,360, leaving net earnings of \$41,451,628, which exceeds the total net for the 12 months of 1925 by \$9,187,213. As the interest charges on the Canadian National (lines in Canada) bonded debt due the public was in 1925 a total of \$39,539,506.95 the net earnings of the system for the entire calendar year of 1926 will fulfill Sir Henry Thornton's prediction that Parliament would not have to be asked for money to meet interest charges.

For the eleven-month period of 1926 the operating ratio and net earnings compared with those of similar eleven-month periods of the preceding years are as shown below:

	Net Earn. for 11 Months.	Operat. Ratio.
1922 .....	\$5,848,151	97.23
1923 .....	16,723,089	92.74
1924 .....	14,483,968	93.30
1925 .....	26,916,205	87.83
1926 .....	41,451,628	82.93

## Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings.

- AIR BRAKE ASSOCIATION.**—T. L. Burton, 165 Broadway, New York City. Next meeting, May 24-27, 1927, Mayflower Hotel, Washington, D. C. Exhibit by Air Brake Appliance Association.
- AIR BRAKE APPLIANCE ASSOCIATION.**—J. H. Ainsworth, A. M. Byers Co., 410 Union Bank Bldg., Pittsburgh, Pa. Meets with Air Brake Association.
- AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.**—J. D. Gowin, 112 W. Adams St., Chicago.
- AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.**—E. L. Duncan, 332 S. Michigan Ave., Chicago. Next meeting, June 21-23, 1927, Mackinac Island, Mich.
- AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.**—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Next annual meeting, November, 1927, Havana, Cuba.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.**—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Annual convention, June 21-24, 1927, San Francisco.
- AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.**—C. E. Bell, Seaboard Air Line, Washington, D. C. Next meeting, Chicago.
- AMERICAN ELECTRIC RAILWAY ASSOCIATION.**—J. W. Welsh, 292 Madison Ave., New York. Annual convention, Oct. 3-7, 1927, Cleveland Public Auditorium, Cleveland, Ohio.
- AMERICAN RAILROAD MASTER TINKERS' COPPER-SMITHS' AND PIPE FITTERS' ASSOCIATION.**—C. Borchardt, 203 North Hamlin Ave., Chicago, Ill.
- AMERICAN RAILWAY ASSOCIATION.**—H. J. Forster, 30 Vesey St., New York, N. Y.  
Division I.—Operations.—J. C. Caviston, 30 Vesey St., New York.  
Freight Station Section (including former activities of American Association of Freight Agents).—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill. Annual convention, May 10-14, 1927, Memphis, Tenn.  
Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., N. Y.  
Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association).—J. C. Caviston, 30 Vesey St., New York, N. Y.  
Safety Section.—J. C. Caviston, 30 Vesey St., New York. Next meeting, April 19-21, Chicago.  
Telegraph and Telephone Section (including former activities of the Association of Railroad Telegraph Superintendents).—W. A. Fairbanks, 30 Vesey St., New York.  
Division II.—Transportation (including former activities of the Association of Transportation and Car Accounting Officers).—G. W. Covert, 431 South Dearborn St., Chicago.  
Division III.—Traffic, J. Gottschalk, 143 Liberty St., New York.  
Division IV.—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Annual convention, March 8-10, 1927, New Palmer House, Chicago. Exhibit by National Railway Appliances Association, March 7-10.  
Construction and Maintenance Section.—E. H. Fritch. Next meeting, March 8-10, 1927, Chicago.  
Electrical Section.—E. H. Fritch.  
Signal Section (including former activities of the Railway Signal Association).—H. S. Balliet, 30 Vesey St., New York. Annual meeting, March 7-8, 1927, Palmer House, Chicago.  
Division V.—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Annual meeting, June 7-9, 1927, Montreal, Que. No exhibits at this meeting.  
Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago. Annual convention, 1927, Louisville, Ky.  
Division VI.—Purchases and Stores (including former activities of the Railway Storekeepers' Association).—W. J. Farrell, 30 Vesey St., New York, N. Y. Next meeting, May or June, 1927, Chicago. No exhibits at this meeting.  
Division VII.—Freight Claims (including former activities of the Freight Claim Association).—Lewis Pilcher, 431 South Dearborn St., Chicago, Ill. Annual meeting, June 14-17, Quebec, Canada.  
Car Service Division.—C. A. Buch, 17th and H Sts., N. W., Washington, D. C.  
**AMERICAN RAILROAD BRIDGE AND BUILDING ASSOCIATION.**—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Exhibit by Bridge and Building Supply Men's Association. Annual convention, October 18-20, 1927, Hotel Nicolet, Minneapolis, Minn.
- AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.**—H. W. Byerly, General Immigration Agent, Northern Pacific, St. Paul, Minn. Annual meeting, June, 1927, Detroit, Mich.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.**—(Works in co-operation with the American Railroad Association Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Next annual convention, March 8-10, 1927, New Palmer House, Chicago. Exhibit by National Railway Appliances Association, March 7-10.
- AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.**—G. G. Macina, C. M. & St. P. Ry., 11402 Calumet Ave., Chicago. Annual convention, September 7-9, 1927, Hotel Sherman, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.
- AMERICAN SHORT LINE RAILROAD ASSOCIATION.**—T. F. Whitteley, 1319-21 F St., N. W., Washington, D. C.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.**—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, Marion B. Richardson, Associate Mechanical Editor, *Railway Age*, 30 Church St., New York.
- AMERICAN WOOD PRESERVERS' ASSOCIATION.**—E. J. Stocking, 111 West Washington St., Chicago. Annual meeting, January 25-27, 1927, Nashville, Tenn.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.**—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Annual convention, 1927, New Orleans, La.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.**—Jos. A. Andreucetti, C. & N. W., Room 413, C. & N. W. Station, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.
- ASSOCIATION OF RAILWAY EXECUTIVES.**—Stanley J. Strong, 17th and H Sts., N. W., Washington, D. C.
- BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.**—D. A. Hultgren, Massey Concrete Products Corp., Chicago. Meets with American Railway Bridge and Building Association.
- CANADIAN RAILWAY CLUB.**—C. R. Crook, 129 Charton St., Montreal, Que.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.**—Aron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.
- CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.**—J. W. Krause, 514 East Eighth St., Los Angeles, Calif. Regular meetings, second Friday of each month, 514 East Eighth St., Los Angeles.
- CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.**—F. G. Wiegman, 721 North 23rd St., East St. Louis, Ill. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.
- CENTRAL RAILWAY CLUB.**—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.
- CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.**—A. S. Sternberg, Belt Ry. of Chicago, Polk and Dearborn Sts., Chicago. Annual convention, September, 1927.
- CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.**—B. S. Johnson, W. H. Miner, Inc., 209 S. La Salle St., Chicago.
- CINCINNATI RAILWAY CLUB.**—D. R. Boyd, 811 Union Central Bldg., Cincinnati, Ohio. Meetings, 2nd Tuesday in February, May, September and November.
- CLEVELAND STEAM RAILWAY CLUB.**—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, except July, August, September, Hotel Hollenden, Cleveland.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.**—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Next convention, August 16-18, 1927, Hotel Lafayette, Buffalo, N. Y. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.**—W. R. Walsh, Ewald Iron Co., Louisville, Ky.
- INTERNATIONAL RAILWAY FUEL ASSOCIATION.**—L. G. Plant, 80 E. Jackson Blvd., Chicago. Annual convention, May 10-13, 1927, Hotel Sherman, Chicago. Exhibit by International Railway Supply Men's Association.
- INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.**—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn. Annual convention, September 6-9, 1927, Chicago.
- INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.**—W. H. Harris, 343 S. Dearborn St., Chicago. Earl E. Thulin, assistant secretary, 715 Peoples Gas Bldg., Chicago. Meets with International Railway Fuel Association.
- MASTER BOILER MAKERS' ASSOCIATION.**—Harry D. Vought, 26 Cortlandt St., New York. Next annual convention, May 3-6, 1927, Hotel Sherman, Chicago.
- NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.**—E. A. Morse, vice-president, Potosi Tie & Lumber Co., St. Louis, Mo. Next convention, January 27 and 28, 1927, Nashville, Tenn.
- NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.**—James B. Walker, 49 Lafayette St., New York. Annual meeting, October, 1927, Dallas, Tex.
- NATIONAL RAILWAY APPLIANCES ASSOCIATION.**—C. W. Kelly, 845 South Wabash Ave., Chicago. Annual exhibition, March 7-10, 1927, at convention of American Railway Engineering Association.
- NATIONAL SAFETY COUNCIL.**—Steam Railroad Section: J. E. Long, Superintendent Safety, D. & H., Albany, N. Y.
- NEW ENGLAND RAILROAD CLUB.**—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2nd Tuesday in month, excepting June, July, August and September, Copley Plaza Hotel, Boston, Mass.
- NEW YORK RAILROAD CLUB.**—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3rd Friday in month, except June, July and August.
- PACIFIC RAILWAY CLUB.**—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings, 2d Thursday in month, alternately in San Francisco and Oakland.
- RAILROAD MOTOR TRANSPORT CONFERENCE.**—F. J. Scott, Supervisor Motor Service, Penna. R. R., Philadelphia.
- RAILWAY ACCOUNTING OFFICERS ASSOCIATION.**—E. R. Woodson, 1116 Woodward Building, Washington, D. C. Annual meeting, June 7-10, 1927, Cosmopolitan Hotel, Denver, Colo.
- RAILWAY BUSINESS ASSOCIATION.**—Frank W. Noxon, 1406 Packard Bldg., Philadelphia, Pa.
- RAILWAY CLUB OF PITTSBURGH.**—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.
- RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.**—Edward Wray, 9 S. Clinton St., Chicago.
- RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.**—F. W. Venton, Crane Co., 836 S. Michigan Ave., Chicago. Meets with Traveling Engineers' Association, September, 1927.
- RAILWAY FIRE PROTECTION ASSOCIATION.**—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October, 1927.
- RAILWAY REAL ESTATE ASSOCIATION.**—R. H. Morrison, C. & O. Ry., Richmond, Va.
- RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.**—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division and Purchases and Stores Division, A. R. A. No exhibits in 1927.
- RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.**—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A., Division I.
- RAILWAY TREASURY OFFICERS' ASSOCIATION.**—F. L. Koentz, Elgin, Joliet & Eastern Ry., Chicago.
- ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.**—T. F. Donahoe, Gen. Supvt. Road, Baltimore & Ohio, Pittsburgh, Pa. Annual convention, September 20-22, 1927, Buffalo, N. Y. Exhibit by Track Supply Association.
- ST. LOUIS RAILWAY CLUB.**—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.
- SIGNAL APPLIANCE ASSOCIATION.**—F. W. Edmunds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A., Signal Section.
- SOUTHEASTERN CARMEN'S INTERCHANGE ASSOCIATION.**—Clyde Kimball, Inman Shops, Atlanta, Ga. Meets semi-annually.
- SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.**—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta.
- SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.**—R. G. Parks, A. B. & A. Ry., Atlanta, Ga.
- TRACK SUPPLY ASSOCIATION.**—W. C. Kidd, Ramapo-Ajax Corporation, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association, September, 1927.
- TRAVELING ENGINEERS' ASSOCIATION.**—W. O. Thompson, Gen. Supt. R. S., New York Central, Buffalo, N. Y. Annual meeting, September, 1927, Hotel Sherman, Chicago. Exhibit by Railway Equipment Manufacturers' Association.
- WESTERN RAILWAY CLUB.**—Bruce V. Crandall, 189 West Madison St., Chicago. Regular meetings, 3rd Monday each month, except June, July and August.



## Traffic

The Post Office Department announces that 1,043 extra railway mail storage cars were used in handling the Christmas mails; that is, during the first 25 days of December.

The Seaboard Air Line announces that the extensions of its road from West Palm Beach, Fla., southward to Miami, and from Fort Ogden, Fla., southward to Naples, are now open for passenger business, having been put in service for freight some weeks ago. In connection with this opening, the management has invited about 600 guests from different parts of the country, including over 100 from New York and vicinity, to attend the opening. Five special trains were run from New York, Baltimore and other cities.

The Southern Pacific, in conjunction with the Texas Mexican and the National Railways of Mexico, has established through sleeping car service between Houston, Texas, and Laredo, Mex., Monterrey and Tampico by way of Corpus Christi. The cars leave Houston at 9:30 p.m., arrive at Corpus Christi at 7:30 a.m. the next morning, Laredo at 3:35 p.m., Monterrey at 1:15 a.m. the second morning, and Tampico at 7:45 p.m. of that day. Returning they leave Tampico at 6:05 a.m., arrive at Monterrey at 8 p.m., Laredo at 5:40 a.m. the next morning, Corpus Christi at 5 p.m. and Houston at 7:40 the second morning.

The Interstate Commerce Commission has issued a decision finding that wheels with propeller blades, used to direct attention by their revolutions to advertising matter on sign boards, are entitled to the freight classification rating provided for windmill parts. Complaint had been filed with the commission because the railroads applied to a shipment of such wheels the first class rating applicable to sheet-iron or sheet-steel ware, N. O. I. B. N. The commission in its decision said that these wheels are not sheet-iron or sheet-steel ware within the meaning of that classification, applied as those terms are commonly understood, that they are not wooden wheels nor can they be said to be windmill parts, but that they are more analogous to windmill parts than to the other classifications.

### Reconsideration of Florida Rates Asked

The Seaboard Air Line and the Atlantic Coast Line have filed a petition with the Interstate Commerce Commission for a reopening of the commission's Southern Class Rate Investigation and for a reconsideration and modification of the findings in that case in so far as they relate to rates to and from points in the state of Florida. The basis for the construction of the Florida rates used by the commission in this case, the petition states, is not adapted to the requirements of the situation in the Florida peninsula and should not be adhered to. No extensive readjust-

ments or reductions of the Florida rates should be made at this time, the roads say, which fail to take into account the present status of railroad construction in that state and expenditures already made or to be made by the carriers for extensions and improvements of their facilities.

### Trans-Missouri-Kansas Shippers' Advisory Board

The Trans-Missouri-Kansas Shippers' Advisory Board held its 16th regular meeting at Kansas City, Mo., on December 15, at which Clyde M. Reed was re-elected general chairman; E. N. Adams, manager of the Tulsa Traffic Association, Tulsa, Okla., alternate chairman; R. W. Moore, vice-chairman, and P. W. Coyle, (St. Louis Chamber of Commerce), general secretary.

The board adopted a resolution to co-operate with the Car Service Division of the American Railway Association in carrying out the proposed national car loading survey, and the various sectional committees will submit their subsequent reports in line with this plan. The Finance and Credit Section reported business and industry to be on a sound basis, and predicted that the first half of the new year will experience a continuation of the present conditions. Other lines of industry reporting indicated a healthy and normal condition within the industries and generally predicted a slight increase in traffic movement within the first quarter as compared with that during the corresponding period of last year.

### Proposed Marine Pooling

The Port of New York authority has made public a study which it has made of the operation of railroad carfloat and lighterage service in New York harbor, in which the conclusion is reached that as much as \$2,500,000 might be saved annually by unified operation of this service. The different roads have in service 138 tugs, 36 steam lighters, 358 carfloats and 1,199 barges. The volume of freight is upward of 100,000 tons a day (average).

It is set forth that saving could be accomplished by pooling the tug boats of all the roads and by having operations directed centrally. By complete consolidation of all facilities, even greater sums could be saved.

The plan suggested contemplates the segregation of short tows to and from certain localities, with tugs of lesser capacity than the type necessary for heavy long haul tows in flotilla formation. It provides also for the consolidation of tug switching at terminals so that the slack of one company can in a sense be taken up by the surplus of another. Special, shifting tugs would be located away from railheads where steamships and other operations are intensified, thereby providing prompt and efficient switching service without the necessity of waiting for tugs to arrive from distant points.

### Freight Commodity Statistics

The Interstate Commerce Commission has issued its quarterly statement showing the freight tonnage transported by Class I steam railways for the quarter ended September 30. The comparison, by general groups shows the tonnage transported during the third quarter in 1926, with the corresponding period in 1925, also a comparison for January 1 to September 30.

Classes of commodities	Number of tons originated		
	Quarter ended Sept. 30, 1926	Quarter ended Sept. 30, 1925	Per cent of increase 1926 over 1925
Products of agriculture.....	36,882,555	28,387,945	8.79
Animals and products.....	6,554,621	6,397,822	2.45
Products of mines.....	218,949,356	199,414,665	9.80
Products of forests.....	25,322,559	25,303,849	.07
Manufactures and miscellaneous.....	79,865,489	75,825,404	5.33
All L.C.L. freight.....	9,968,161	10,434,910	*4.47
Total .....	571,542,741	345,764,595	7.46
Products of agriculture.....	59,161,210	52,608,792	12.45
Animals and products.....	11,603,455	11,303,858	2.65
Products of mines.....	372,114,489	347,540,153	7.07
Products of forests.....	50,025,068	50,703,263	*1.34
Manufactures and miscellaneous.....	154,651,595	146,294,602	5.71
All L.C.L. freight.....	17,268,091	17,428,865	*.92
Total .....	664,823,908	625,879,533	6.22
Classes of commodities	Number of tons originated		
	Nine months ended Sept. 30, 1926	Nine months ended Sept. 30, 1925	Per cent of increase 1926 over 1925
Products of agriculture.....	74,890,412	71,504,129	4.74
Animals and products.....	18,884,791	18,940,764	*.30
Products of mines.....	546,502,223	505,886,108	8.03
Products of forests.....	80,424,265	82,472,312	*2.48
Manufactures and miscellaneous.....	225,683,901	214,018,791	5.45
All L.C.L. freight.....	29,495,768	30,192,078	*2.31
Total .....	975,881,360	923,014,182	5.73
Products of agriculture.....	153,568,080	143,821,093	6.78
Animals and products.....	33,963,726	33,454,679	1.52
Products of mines.....	962,768,835	894,638,397	7.62
Products of forests.....	153,872,457	160,525,050	*4.14
Manufactures and miscellaneous.....	437,123,711	413,476,052	5.72
All L.C.L. freight.....	50,736,682	50,224,030	1.02
Total .....	1,792,033,494	1,696,139,301	5.65

\*Decrease.

## Equipment and Supplies

### Locomotives

THE SOUTHERN PACIFIC will build eight Mountain type locomotives in its Sacramento shops. These locomotives are to be used in fast passenger service.

THE MISSOURI PACIFIC, reported in the *Railway Age* of December 4 as inquiring for 46 locomotives, is inquiring at this time for only 25 eight-wheel switching locomotives, 5 Mountain type locomotives and 6 Pacific type locomotives.

THE NEW YORK CENTRAL has ordered one switching, oil-electric, battery locomotive of 125 tons from the American Locomotive Company, the Ingersoll-Rand Company and the Electric Storage Battery Company, which companies co-operate in its manufacture.

### Freight Cars

TIDAL REFINING COMPANY.—See Tidewater Oil Company.

THE CHICAGO, BURLINGTON & QUINCY is inquiring for 1,000 box cars of 40 tons' capacity.

THE NORTHERN PACIFIC is planning to purchase 500 freight cars and rebuild 500 logging cars.

THE BALTIMORE & OHIO is inquiring for 100 underframes and superstructures for caboose cars.

THE MISSOURI-KANSAS-TEXAS will build 500 freight cars in its own shops at Denison, Texas.

THE BURLINGTON REFRIGERATOR EXPRESS has ordered 200 steel underframes from the Ryan Car Company.

THE CUBAN-AMERICAN SUGAR COMPANY has ordered 100 cane cars of 15 tons capacity from the Gregg Company.

THE TIDEWATER OIL COMPANY is inquiring for 200 tank cars of 8,000 gal. capacity. These cars are for the Tidal Refining Company.

THE BARBER ASPHALT COMPANY has ordered 200 tank cars of 10,000 gal. capacity from the General American Tank Car Corporation.

THE CARNEGIE STEEL COMPANY has ordered eight ore hopper cars of 75 tons capacity from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of October 30.

THE DELAWARE, LACKAWANNA & WESTERN has ordered 25 Rodger ballast cars from the Rodger Ballast Car Company. Inquiry for this equipment was reported in the *Railway Age* of December 11.

THE SOUTHERN PACIFIC will build at its Sacramento shops 500 box cars, 150 flat

cars 40 ft. long and 100 flat cars 50 ft. long. The company will also build at its Los Angeles shops 50 caboose cars. This equipment is for service on the Pacific Lines of the Southern Pacific Company.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 500 box cars and 500 coal cars from the Bettendorf Company; 500 box cars from the American Car & Foundry Company; 250 flat cars from the Ryan Car Company and 500 automobile cars from the Standard Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of November 20.

THE MISSOURI PACIFIC has ordered 750 automobile cars, 100 gondola cars and 20 caboose cars from the Mt. Vernon Car & Manufacturing Company; 250 hopper cars from the Standard Steel Car Company; 750 automobile box cars from the General American Car Company; 250 stock cars, 500 box cars and 500 automobile furniture cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* on December 4.

### Passenger Cars

THE CENTRAL VERMONT has ordered one gas-electric equipment for converting a storage battery car to gas-electric, from the J. G. Brill Company.

THE COLUMBUS & GREENVILLE has ordered one combination passenger and baggage gasoline rail motor car and one all passenger trailer car from the J. G. Brill Company.

THE PENNSYLVANIA has ordered 16 steel motor passenger cars from the American Car & Foundry Company. Twelve of these cars are for the Pennsylvania and four for the Hudson & Manhattan.

THE NEW YORK CENTRAL has ordered 27 dining cars from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of December 11.

THE MOBILE & OHIO is inquiring for six steel baggage express cars 60 ft. long, four steel passenger coaches 69 ft. long, two steel passenger coaches with partitions and one steel mail baggage car 60 ft. long.

THE NEW YORK RAPID TRANSIT CORPORATION (BROOKLYN MANHATTAN TRANSIT CO.) contemplates buying 50 triplex units. These are to be the same type as the 67 now on order and reported in the *Railway Age* of February 27, 1926.

THE BALTIMORE & OHIO is inquiring for 50 coaches, 15 combination passenger and baggage cars, 15 baggage cars 70 ft. long, 5 baggage cars with 30-ft. mail compartment and 10 baggage cars with 15-ft. mail compartment. The company recently placed an order for 5 dining cars with the Pullman Car & Manufacturing Corporation.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 40 suburban cars from the Standard Steel Car Company, 4 70-ft. combination baggage and smoking cars, 4 combination baggage and mail cars and 10 70-ft. baggage cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of November 27.

THE CHICAGO, BURLINGTON & QUINCY has ordered 10 coaches, 8 chair cars and one combination baggage, passenger and mail car from the Pullman Car & Manufacturing Corporation and 15 baggage cars and 4 combination passenger and baggage cars from the American Car & Foundry Company. Also inquiring for five or six passenger car underframes.

### Signaling

THE CHESAPEAKE & OHIO has ordered from the General Railway Signal Company an electric interlocking, 35 working levers, for Richmond, Va.

THE MADRID, ZARAGOZA & ALICANTE has ordered from the General Railway Signal Company automatic block signals to be installed between Hospitalet and Molins de Rey, Spain, 6½ miles, and from Gava to Villanueva, Spain, 15 miles. The signals will be semaphores, model 2A, except in tunnels, where color light signals will be used. The line is double track.

THE MAINE CENTRAL has ordered from the Union Switch & Signal Company material for interlocking at the single-track drawbridge over the Kennebec river, Bath, Me., which is of the vertical lift type, 234 ft. long and rising 127 ft. This bridge has an upper deck for highway traffic. Color light signals will be used and there will be interlocked smashboards. A track model will be used for indicating the approach of trains two blocks away.

### Complete Signaling Chattanooga to Jacksonville

The Southern is installing automatic block signals with automatic train stops throughout its lines from Chattanooga, Tenn., south to Jacksonville, Fla., 502 miles. From Chattanooga to Macon, 240 miles, the work (including automatic visual wayside signals) is to be completed about January 31. The scene of the collision of December 23, Rockmart, 50 miles north of Atlanta, had nearly been reached by the construction forces on that day. On the line south of Macon (the Georgia Southern & Florida) the work was ordered in December.

The Southern is also installing G. R. S. automatic train stops in connection with new automatic block signals that are being put in on the line from Salisbury, N. C., westward to Knoxville, Tenn., 270 miles. All this work is additional to that ordered by the Interstate Commerce Commission, and was decided upon without government compulsion.

The automatic train control installed by this company under the two I. C. C. orders aggregates about 600 miles.



## Supply Trade

Sidney G. Johnson in addition to his other affiliations will act as special representative of the **General Railway Signal Company**, effective January 1, 1927.

J. B. Marks has been elected executive vice-president of the **Colorado Fuel & Iron Company**, Denver, Colo. Mr. Marks will have supervision over all departments of the company's activities.

The **Adams & Westlake, Company**, Chicago, is planning to construct a new plant at Elkhart, Ind., to cost approximately \$800,000. The plant, which has been located in Chicago since 1867, will be moved to the new location some time before next fall.

H. C. Mode has joined the Camden, N. J., plant staff in the railroad division of the **American Brown Boveri Electric Corporation**. Mr. Mode served for about twenty years with the **Westinghouse Electric & Manufacturing Company**, first at Pittsburgh, Pa., and more lately in Philadelphia.

The **Bettendorf Company**, Bettendorf, Iowa, has about completed work on a new three-story and basement office building 77 ft. wide and 140 ft. long. The building is of brick and steel construction and was erected by the company, using shop labor so far as that was practicable; the total cost was about \$275,000.

F. J. Foley, who on January 1 was elected vice-president in charge of the sales department of the **American Locomotive Company**, with headquarters at New York, was born on May 14, 1879, at Chillicothe, Ohio. He began



F. J. Foley

service as a messenger boy for the Baltimore & Ohio at Newark, Ohio, in 1893, afterwards working as a telegraph operator and train dispatcher on several railroads in the middle west until 1897, when he entered the manufacturing department of the **Pullman Company** at Pullman, Ill. Mr. Foley has been with

the **Railway Steel-Spring Company** since its incorporation in 1902, in charge of its several plants, and then became general superintendent of the company in 1912, and vice-president of sales in 1919, which position he leaves to go with the **American Locomotive Company**.

O. C. Badger, engineer in the **Railways Bureau** of the **Portland Cement Association**, Chicago, has resigned to become general manager of the **Permanent Waterproofing Company**, 122 South Michigan avenue, Chicago, effective January 1. Mr. Badger was born at Niles, Mich., on March 31, 1891, and graduated from **Armour Institute** in 1913 in civil engineering. From 1915 to 1917 he was employed in the office of



O. C. Badger

the chief engineer of the **Atchison, Topeka & Santa Fe**, eastern lines, at Topeka, Kan., and from February, 1917, to March, 1926, he was employed as assistant to the bridge engineer of the **Santa Fe** system, with headquarters at Chicago. On the latter date he left the service of the **Santa Fe** to become engineer in the **Railways Bureau** of the **Portland Cement Association**, which position he held until his recent resignation.

The **Cogan Machine & Foundry Company, Inc.**, Cleveland, Ohio, will put up a new factory building of brick and steel sash construction, at 1440 East Fifty-fifth street. This company's manufactures include railroad plate and coil spring forming and quenching machines and high pressure pump-driven bulldozers and bending machines.

E. McCormick, vice-president in charge of financial affairs of the **Railway Steel-Spring Company**, at New York, has been appointed vice-president in charge of sales, succeeding F. J. Foley, who has been appointed vice-president in charge of sales of the **American Locomotive Company**. L. S.

Peabody, local sales agent of the **Railway Steel-Spring Company**, at New York, has been appointed district sales manager, with headquarters at New York.

The **Westinghouse Electric & Manufacturing Company** has merged its two subsidiaries, the **Westinghouse Electric Products Company**, Mansfield, Ohio, and the **George Cutter Company**, South Bend, Ind., into the parent company, and will operate them as the Mansfield works and the street lighting department, respectively, of the **Westinghouse Electric & Manufacturing Company**.

F. A. Estep, for many years president and treasurer of the **R. D. Nuttall Company**, Pittsburgh, Pa., manufacturers of gears, pinions and trolleys, and a subsidiary of the **Westinghouse Electric & Manufacturing Company**, has been elected chairman of the board; the duties of treasurer were added to those of vice-president **Milton Ruppert**. The officers of the **Nuttall company** now are as follows: F. A. Estep, chairman of the board; E. M. Herr, president; F. A. Merrick, first vice-president; **Milton Ruppert**, vice-president and treasurer, and **James C. Bennett**, secretary.

Theodore Beran of New York, H. L. Monroe of Chicago and J. A. Cranston of San Francisco were elected commercial vice-presidents of the **General Electric Company**, Schenectady, N. Y., in charge of the commercial activities of the company in the New York, Central and Pacific Coast districts respectively. E. W. Allen, manager of engineering, was elected vice-president in charge of engineering, with office in Schenectady. On account of the temporary absence of Vice-President F. C. Pratt because of illness, G. E. Emmons, former vice-president, was elected acting vice-president to take charge of manufacturing activities. Mr. Beran has been with the **General Electric Company** since its foundation, and has been manager of the New York district since 1903; Mr. Monroe has been with the company 38 years and district manager in Chicago for 13 years; Mr. Cranston, with the company since its foundation, was appointed Pacific Coast manager in 1923; Mr. Allen entered the test department of the company in 1901, and has been manager of engineering since 1924, and Mr. Emmons, with the company since its foundation, was vice-president in charge of manufacturing from 1916 until his retirement in 1924.

### New Directors of American Brown Boveri

Stockholders of the **American Brown Boveri Electric Corporation**, at their annual meeting on January 5, New York, unanimously approved the election of directors by the voting trustees, which took place on January 4. The new board of directors consists of fourteen members, namely: Clifford Buckman, of Pynchon & Company; James I. Bush, vice-president of the **Equitable Trust Company**; Allen Curtis, of Curtis & Sanger, Boston; William

M. Flook, representing the Anthony N. Brady estate; Edward N. Goodwin, representing Brown Boveri & Company, Ltd., of Switzerland; William V. Griffin, representing the Anthony N. Brady estate; James Imbrie, president of Imbrie & Company; William F. Ingold, of Pynchon & Company; Henry Lockhart, Jr., vice-president of Blair & Company, Inc.; John J. Rudolf, of A. Iselin & Company; Theodore G. Smith, vice-president of the Central Union Trust Company; Elisha Walker, chairman of the board and president of Blair & Company, Inc.; Frank R. Warton, formerly vice-president of the Allied Packers Company, and Laurence R. Wilder, president of the American Brown Boveri Electric Corporation.

New financial interests have become identified with the American Brown Boveri Electric Corporation through the election to the directorate of representatives of Blair & Company, Inc., the Central Union Trust Company, the Equitable Trust Company and Curtis & Sanger. William M. Flook, of the Brady estate, has been elected chairman of the executive committee.

The following officers of the corporation were elected on Wednesday: Laurence R. Wilder, president; Clinton L. Bardo, Theodore Boveri, W. G. Groesbeck, Earle G. Hines and Frank R. Warton, vice-presidents; Norman R. Parker, comptroller, and J. T. Wickersham, secretary and treasurer. Theodore Boveri, the son of the late Walter Boveri, one of the founders of Brown Boveri & Company, Ltd., was for many years responsible for design and manufacture in the Baden, Switzerland, works of Brown Boveri. His election as vice-president of the American Brown Boveri Electric Corporation, in charge of engineering, cements the working relations between the two concerns.

## Obituary

**Henry N. Winner**, general manager of the Garlock Packing Company, Palmyra, N. Y., died at Philadelphia, on November 12, after a brief illness. Mr. Winner was born in Brooklyn on September 19, 1879, and had spent his entire life in the mechanical packing business.

## Trade Publications

**PIPE CLAMPS.**—The V. V. one screw malleable iron pipe clamp for fastening conduits to brick, concrete or wood are briefly described in the leaflet prepared by the V. V. Fittings Company, Philadelphia, Pa.

**MOTORS FOR LIGHT WEIGHT CARS.**—Publication GEA-417 of the General Electric Company, Schenectady, N. Y., gives dimensions, weights and capacities of the GE-246A, 600-volt railway motor for light weight cars.

**SLING CHAINS.**—A circular and price list on the various styles of the Taylor-Mesaba sling chains has been issued by the S. G. Taylor Chain Company, 140 South Dearborn street, Chicago. Tables give the safe working loads on single and double sling chains.

**NO-FREEZE.**—A number of circulars have been issued recently by The A. C. Horn Co., Long Island City, N. Y., setting forth the merits of their product, "No-Freeze," a liquid designed to lower the freezing point of concrete and also to increase its workability and to accelerate its setting.

**MECHANICAL DRIVE TURBINES.**—The General Electric Company, Schenectady, N. Y., describes in Publication GEA-578 Type D mechanical drive turbines for centrifugal pumps. These turbines can be arranged to operate at steam pressures up to 400 lb. and steam temperatures up to 725 deg. F.

**FANS AND BLOWERS.**—The American Blower Company, Detroit, Mich., gives in Bulletin No. 8001 a brief description of the mechanical construction of the American "Sirocco" fan, together with complete capacity and dimension tables for the engineer's use. The "Sirocco" Utility blower is also described.

**WINTER CONSTRUCTION TOOLS.**—A 24-page bulletin, designated No. 52, has been issued by the Aeroil Burner Co., Inc., Union City, N. J., in which is illustrated and described its winter construction tools, including concrete heaters, thawing torches, mortar heating pans, salamanders, water heaters and furnace burners.

**DYNAMOMETERS.**—The General Electric dynamometer for the measuring of torque or power of internal combustion engines, or the investigation of every part of automotive engine equipment, separately or in combination, is described and illustrated in Bulletin GEA-544 issued by the General Electric Company, Schenectady, N. Y.

**SMOKELESS HEATING EQUIPMENT.**—The Aeroil Burner Co., Inc., of Union City, N. J., has issued a 24-page bulletin, No. 54, describing and illustrating the oil burning heating equipment of this company for melting and heating asphalt, tar and other bituminous products in connection with roofing, water proofing, insulating, flooring, and road and paving work.

**SHEET STEEL CORNICES.**—A complete set of standard specifications for the fabrication and setting of sheet steel cornices for various types of building construction has recently been issued by the Sheet Steel Trade Committee, Pittsburgh, Pa. These specifications form a 12-page booklet bound in a standard filing folder and are published in accord with recommendations of the American Institute of Architects.

**STEAM GENERATORS.**—The factors of gravity, adhesion, cohesion, the relation of the steam bubble and surface tension as functioning in the old and new ways of making steam are analyzed and compared in a 20-page booklet entitled "The new way of making steam," which has been issued by the La Mont Corporation, 200 Fifth avenue, New York City. The La Mont steam generator described is suitable for industrial furnaces of any character discharging waste gases at a heat of 750 deg. or over. Its free film evaporation permits the application of the laws which have come to be recognized as governing the efficient transfer of heat.

## Construction

**ATLANTIC COAST LINE.**—This road has let contracts to the Cornell-Young Company of Macon, Ga., and to Sutton Brothers of Jacksonville, Fla., for the construction of sixteen miles of railroad from Thonotosassa, Fla., to Richland, Ga. The route is being built to eliminate the necessity of traveling by way of Lakeland over the west coast route into Tampa and will shorten the route about fifty miles.

**BALTIMORE & OHIO.**—This company has awarded a contract to Frainie Bros. & Haigley, Baltimore, Md., for the construction of an extension to its roundhouse at Willard, Ohio, to cost approximately \$35,000.

**CHICAGO, BURLINGTON & QUINCY.**—The Nebraska State Railway Commission has ordered this company to construct, during 1927, a new station at Wilber, Neb., to cost about \$20,000.

**DELAWARE, LACKAWANNA & WESTERN.**—This company has asked for bids for the construction of a steel, vertical lift bridge to be erected over the Hackensack river in the Jersey Meadows, between Hoboken and Newark, 65 feet south of the present bridge. This project, including the changes in track elevation incident thereto, will cost about \$3,000,000. The bridge will give a clearance above the water of 135 feet, with span lifted and of 40 feet with span closed. It will have three tracks instead of two, as the present structure provides.

**DIAMOND MATCH COMPANY.**—A contract has been awarded to Siems & Carlson, Spokane, Wash., for the construction of a 36-in. gage logging railroad from Kalispell Bay, Priest Lake, Idaho, westward 13 miles into the Kalispell Creek drainage district to be used in connection with the logging of timber from tracts totaling 12,500 acres.

**GREAT NORTHERN.**—This company has awarded a contract to the Puget Sound Light & Power Company for the installation of electrical equipment on the line to be electrified between Skykomish, Wash., and Wenatchee.

**MISSOURI PACIFIC.**—Bids closed on December 29 for the grading and bridging for 29.2 miles of second track at four different points between St. Louis, Mo., and Jefferson City. This project is expected to involve an expenditure of about \$3,000,000. A contract for the grading and bridging of a 7.5 mile extension extending from Nashville, Ark., has been let to the W. P. McGeorge & Co., Pine Bluff, Ark., at a cost of about \$230,000. The same contractor has been awarded a contract for the grading and bridging of an extension between Hot Springs, Ark., and Hawes, to cost about \$400,000.

**MOBILE & OHIO.**—A contract for the reconstruction of a 400-ft. elevator conveyor at Mobile, Ala., destroyed by a recent storm, has been let to B. E. Buffalo & Co.,



Mobile, at a cost of about \$15,000. The installation of equipment is expected to require an additional expenditure of \$7,000.

**NEW YORK CENTRAL.**—A contract has been let to the Roberts & Schaefer Company, Chicago, for the installation of a multiple pit "N. & W." type standard electric cinder plant at Corning, Ohio.

**PENNSYLVANIA.**—This company has awarded a contract to the Jump Housewrecking Company, Philadelphia, for the removal of the old 2-story brick Pullman building at Thirty-second and Market streets, that city, in connection with its terminal improvement program at that point. A contract has been awarded to the United Dredging Company, Atlantic City, N. J., for dredging at Cold Spring Harbor, N. J., to cost approximately \$31,000.

**PENNSYLVANIA.**—A contract has been awarded to the Electro Construction Company, Philadelphia, for electric wiring for its new tank shop at Altoona, Pa., to cost approximately \$31,000. A contract has been awarded to P. T. Clifford & Son, Valparaiso, Ind., for grading, masonry and track work for a new yard at McCollough, Ohio, at an approximate cost of \$160,000. To the George A. Fuller Company, New York, a contract for an extension to the commissary building at Sunnyside yard, Long Island City, N. Y., has been awarded; approximate cost, \$200,000.

**READING.**—The Atlantic City, a Reading subsidiary is planning new terminal and station facilities for Atlantic City, N. J., involving a new passenger station, new passenger and freight yards and the widening of streets in the vicinity, to cost approximately \$4,000,000. The passenger terminal provides for ten tracks, each to hold a train of 14 coaches and engine. All tracks will have concrete platforms and butterfly train sheds.

**ST. LOUIS-SAN FRANCISCO.**—This company and the city of St. Louis, Mo., have reached an agreement whereby the city will contribute \$185,000 of the cost of constructing a \$485,000 reinforced concrete viaduct to carry Arsenal Street over the company's tracks and the river Desperes. Plans call for a four-span structure, 1,750 ft. long and 60 ft. wide.

**SOUTHERN PACIFIC.**—A contract for the construction of freight stations at Edinburg, Tex., and McAllen has been let to R. W. Abbott, McAllen. Each station has outside dimensions of 90 ft. by 30 ft., with loading docks 40 ft. by 30 ft., and together they involve an expenditure of about \$21,000.

**UNION PACIFIC.**—In connection with local authorities this company will pay 50 per cent of the construction of a highway underpass on the federal aid highway 2½ miles east of Kersey, Colo.

**YAZOO & MISSISSIPPI VALLEY.**—A contract has been let to the Railroad Water & Coal Handling Company, Chicago, for the construction of a 300-ton coaling station at Lambert, Miss., at a cost of about \$50,000.

## Railway Finance

**ALABAMA GREAT SOUTHERN.**—*Bonds Authorized.*—The Interstate Commerce Commission has authorized this company to procure authentication and delivery of \$500,000 first consolidated mortgage 5 per cent bonds, series A, to be held by it until further order of the commission and in partial reimbursement of the capital expenditures previously made. Commissioner Eastman dissented, his dissenting opinion being as follows:

The authority sought and granted in this case covers only the authentication and delivery of the bonds to the applicant and not their issue. I doubt whether authority from us to authenticate and deliver is necessary, but if it is, I do not believe that it should be granted in this case. Applicant is a carrier quite able to finance by the issue of stock. If it should henceforth need to issue additional securities, that method of financing should certainly receive careful consideration. It does not seem to me that this question ought to be prejudged at this time, even by implication, through the authentication and delivery of further bonds.

**ATCHISON, TOPEKA & SANTA FE.**—*Extra Dividend.*—Directors at their meeting on January 4 declared an extra dividend of 75 cents on the common stock, in addition to the regular quarterly dividend of \$1.75, both payable March 1 to stockholders of record January 28.

**ATLANTIC COAST LINE.**—*Acquisition and Stock Issue.*—The Interstate Commerce Commission has authorized this company to acquire control of the Atlanta, Birmingham & Coast, the new company organized to take over the Atlanta, Birmingham & Atlantic. The commission has also authorized the Atlantic Coast Line to issue \$13,756,500 of common stock, to be offered at par to the stockholders in proportion to their holdings. Chairman Eastman dissented in both cases.

**ATLANTIC COAST LINE.**—*Stock Authorized.*—The Interstate Commerce Commission has approved the issuance of \$13,756,500 common stock, to be offered at not less than par to present stockholders on the basis of one share of the new stock for each five shares of preferred or common stock at present held. Commissioner Eastman dissented, his dissenting opinion following in part:

Applicant's stock is selling in the market at more than \$200 per share. Yet it proposes to issue this new stock to its stockholders at par, 100 per share. This is equivalent to a substantial stock dividend. I do not suggest that it should attempt to secure the present market value from its stockholders, but there is plenty of room in a margin of more than 100 points to arrive at a price sufficiently liberal to induce free purchase without descending to par or anything like par. This is a question with which I have for many years been familiar from experience with the laws of Massachusetts, and which I could without difficulty discuss at length. It is sufficient for present purposes to say that I am persuaded that it is desirable, in the public interest and in the interest of sound, conservative corporate financing, that the capitalization of a railroad or public utility company should be kept as low as is reasonably possible, and that no greater amount of either bonds or stock should be issued than can be shown to be "reasonably necessary and appropriate."

**ATLANTIC COAST LINE.**—*Tentative Valuation.*—The Interstate Commerce Commission's tentative valuation report as of June 30, 1917, finds the final value for rate-making purposes of the common-carrier property owned to be \$152,765,705 and that

of the total used property to be \$154,359,373. The outstanding capitalization as of valuation date was \$212,095,355 and its investment in road and equipment, as stated in the books, was \$182,233,025. With readjustments required by the accounting examination, the report says, this would be reduced to \$154,592,066. The cost of reproduction new of the carried property owned was placed at \$158,547,116 and that of the property used at \$159,175,717, exclusive of land. The cost of reproduction less depreciation was placed at \$121,821,043 for the property owned and \$122,422,775 for that used. The company used 70,166 acres of land for carrier purposes, which was assigned a present value of \$21,759,494. On valuation date the company owned securities of other companies of a par value of \$52,859,821 and a book value of \$65,459,645. It also held cash on hand and materials and supplies in the amount of \$23,931,509, of which \$3,900,000 was included in the final value.

**BALTIMORE & OHIO.**—*Operation of C. I. & W.*—This company has applied to the Interstate Commerce Commission for authority to operate as a part of its system under an operating agreement the line of the Cincinnati, Indianapolis & Western, of which the Baltimore & Ohio owns a majority of the stock.

**CHICAGO & NORTH WESTERN.**—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to procure the authentication and delivery by the trustee under its general gold bond mortgage of 1987 of \$1,375,000 of general mortgage bonds, to reimburse the company's treasury for \$375,000 expended in retiring maturing bonds and \$1,000,000 expended for permanent improvements, additions and betterments in 1926.

**CHICAGO GREAT WESTERN.**—*Notes.*—This company has applied to the Interstate Commerce Commission for authority to issue 40 notes at 5½ per cent aggregating \$2,387,609 to the Pullman Car & Manufacturing Company in payment for 200 automobile cars and 300 box cars and to take up unmatured notes in the amount of \$978,241.

**CHICAGO, INDIANAPOLIS & LOUISVILLE.**—*Bonds.*—The Interstate Commerce Commission has granted this company authority to procure the authentication and delivery of \$790,000 first and general mortgage 6 per cent bonds, series B, and to pledge and repledge them from time to time up to June 30, 1928, as collateral security for notes. The bonds cover capital expenditures previously made.

**CHICAGO, MILWAUKEE & ST. PAUL.**—*Brief Asks Approval of Sale.*—A brief asking for the approval of the terms of sale of the Chicago, Milwaukee & St. Paul were filed with Judge James H. Wilkerson in Chicago on January 4 by counsel for the Guarantee Trust Company of New York. The filing of the brief follows hearings on

the petition of the bondholders' defense committee to delay the confirmation of the sale and reorganization plan which were held in Chicago on December 13. Refuting the contention of the Jameson minority interests that the terms of sale were inequitable, the brief points out that the vast majority of the bondholders request the court to confirm the sale, stating that "The Jameson committee is an obstructive minority endeavoring to obtain a profit for itself by delaying a reorganization desired by substantially all other refunding bondholders." The brief further points out that a large part of the Jameson holdings were purchased for speculative purposes and that these purchases were made on the eve of the Milwaukee's receivership or shortly thereafter. The brief reviews numerous reorganization plans which brought about the financial rehabilitation of other first-class transportation systems. In each it is shown that a heavier assessment was necessitated than in the case of the Milwaukee on which the assessment amounts to only about \$9 per share. If Congress passes legislation at this session to refund the Milwaukee's debt to the government, this assessment will be still further reduced, the brief declares.

In conclusion the brief states: "The purchasers believe that the efficiency and prosperity of the railroad cannot be completely restored until the termination of the receivership and the completion of the reorganization. The purchasers therefore earnestly urge the court to confirm the sale at the earliest practicable date and to that end to sign the order of confirmation in the form tendered, subject to the slight change in the description of the status of the Jameson committee's petition."

**CHICAGO, ROCK ISLAND & PACIFIC.—Bonds.**—The Interstate Commerce Commission has granted authority to this company to pledge and repledge from time to time to January 31, 1928, all or any part of \$8,709,000 first and refunding mortgage 4 per cent bonds as collateral security for notes.

**DENVER & SALT LAKE.—Receivership Ended.**—Control of the Denver & Salt Lake, which has been in receivership since August 16, 1917, passed to the reorganized company, the Denver & Salt Lake Railway Company, on December 31. Members of the board include: Gerald Hughes, chairman; Alexander Berger, George H. Burr, W. C. Carpenter and Charles Boettcher. W. R. Freeman, who has been receiver and manager, is to be president of the new company.

**ERIE.—Bonds.**—The Interstate Commerce Commission has authorized the Erie to pledge and repledge from time to time, not exceeding \$219,000, first consolidated mortgage general lien 4 per cent bonds, \$4,842,900 general mortgage 4 per cent convertible 50-year gold bonds, series D, and \$440,000 general mortgage 4 per cent convertible 50-year gold bonds, series B, as collateral security for notes.

**GEORGIA & FLORIDA.—Reorganization Plan Approved.**—The Interstate Commerce Commission has approved the plan of reorganization of this company and the various steps included as part of the re-

organization plan. These include the acquisition by the new company to be known as the Georgia & Florida Railroad, of the lines of the old company known as the Georgia & Florida Railway, the construction of an extension from Augusta, Ga., to Greenwood, S. C., the acquisition by lease of the Statesboro Northern controlled by the former company and the leasehold and stock of which were included in the foreclosure sale.

At the same time the commission has also approved the issuance of securities necessary to put the reorganization into effect. These include:

\$5,000,000 first mortgage bonds, series A, of which \$2,300,000 are to be sold to provide funds for the Greenwood extension, \$1,500,000 to retire receiver's certificates and an indebtedness of the Statesboro Northern, \$400,000 to retire bonds of subsidiary companies and \$800,000 will be substituted for receiver's certificates now pledged as collateral for a loan from the government.

\$1,500,000 income non-mortgage 6 per cent debentures, interest to be paid from available net income, cumulative after the completion of the Greenwood extension.

The first mortgage bonds are to be sold at not less than 87½ and the debenture bonds at not less than par.

\$9,000,000 preferred stock, of which \$6,000,000 is to be issued to holders of the \$6,200,000 old first mortgage bonds, \$2,400,000 to be issued to holders of such bonds who subscribe pro rata for the new income bonds and 50,000 will be issued to holders of the old general mortgage bonds paying 2½ per cent of the face value of these bonds, and \$550,000 to be sold for miscellaneous debts of the receivership and for other corporate purposes.

100,000 shares of common stock without par value, 72,000 shares to be issued to first mortgage bond holders subscribing to the new income bonds, 10,000 shares to be issued to the general mortgage bondholders paying 2½ per cent of the face value of their bonds 17,500 shares to be sold at \$6 a share to bankers who purchase the new first mortgage bonds and 500 other shares.

The capitalization of the old company was \$20,092,000 and fixed charges \$621,020 annually. The capitalization of the new company will be \$16,242,000 (exclusive of the no par value common stock) which will include the bonds issued to pay for the Greenwood extension. The fixed charges will total \$337,020 or \$427,020 inclusive of the interest on the new income bonds.

The Georgia & Florida operates 406 miles of line and has been in receivership since March, 1915.

**GULF, MOBILE & NORTHERN.—Acquisition.**—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Jackson & Eastern by an operating contract providing for unified operation of the two lines.

**INDIANA HARBOR BELT.—Bonds Authorized.**—The Interstate Commerce Commission has authorized the issuance of \$5,000,000 4½ per cent 50-year general mortgage bonds of 1907 to be sold at not less than 94.

The proceeds are to be used for the payment of \$2,500,000 Chicago, Hammond & Western 6 per cent bonds maturing January 1, 1927, for the payment of two 4½ per cent bonds of \$1,000,000 and \$500,000, respectively, held by the Michigan Central and for other corporate purposes. The New York Central, the Michigan Central and the Chicago & North Western, which, with the Chicago, Milwaukee & St. Paul, own all of the Indiana Harbor Belt stock, have been authorized to assume obligation and liability for principal and interest.

**MISSOURI PACIFIC.—Lease.**—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Marion & Eastern by lease. It now owns the stock except directors' shares.

**NORTHERN PACIFIC.—Abandonment of Branch.**—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of that portion of the Northern Pacific Ocosta branch, extending from Engineer's Station 3369 to Bay City, 4.66 miles, in Grays Harbor County, Wash.

**PEARL RIVER VALLEY.—Abandonment.**—The Interstate Commerce Commission has authorized this company to abandon 2,326 feet of line extending to Anderson, Miss., which formerly served a logging camp.

**PENNSYLVANIA.—Maturing Obligations.**—The Pennsylvania Railroad will pay off in January, 1927, nearly \$5,000,000 of maturing obligations, and will do so out of treasury funds without new financing.

The largest item is \$3,894,000 Pennsylvania Railroad 6 per cent Equipment Trusts of 1920, which mature and will be paid January 15. Another item is \$1,000,000 Clearfield & Jefferson Railway Company first mortgage 6 per cent bonds, which mature and will be paid January 1. These bonds were formerly the obligation of the Clearfield & Jefferson, whose line, about 36 miles in length, extends from a point near Irvona, Pa., to Horatio, Jefferson Co., Pa. There will also be paid off \$73,000 Long Island Railroad equipment trust 5 per cent certificates, Series G.

**ROSCOE, SNYDER & PACIFIC.—Securities Authorized.**—The Interstate Commerce Commission has granted authority to issue promissory notes aggregating, not exceeding, \$280,355, and to pledge as collateral security for them two temporary first refunding mortgage bonds aggregating \$250,000. The carrier desired to issue notes totaling \$365,000, but the commission refused to authorize the full amount on the ground that part of the basis for the notes was unpaid dividends, unpaid salaries, etc.

**ST. LOUIS-SAN FRANCISCO.—Securities Authorized.**—The Interstate Commerce Commission has granted authority for the issuance of \$2,127,100 5 per cent prior lien mortgage bonds, series B, to be pledged and repledged from time to time until December 31, 1928, as collateral security for notes. The bonds are based on \$1,822,000 of additions and betterments previously made and \$305,000 covering the purchase of stock of the Muscle Shoals, Birmingham & Pensacola.



**SEABOARD AIR LINE.—Bonds.**—The Seaboard-Air Florida, the East & West Coast and the Florida Western & Northern have applied to the Interstate Commerce Commission for authority for an issue of \$2,451,000 of first mortgage 6 per cent bonds, to be guaranteed by the Seaboard.

**SEABOARD AIR LINE.—Control of Naples, Seaboard & Gulf.**—The Interstate Commerce Commission has authorized the Seaboard Air Line to acquire control, under lease, of the properties of the Naples, Seaboard & Gulf, organized in the interest of the Seaboard, which has recently completed a line from the Estero river, Fla., to Naples.

**SOUTHERN PACIFIC.—Merger of Texas and Louisiana Lines.**—The Texas & New Orleans and other lines of the Southern Pacific system in Texas and Louisiana have filed a brief with the Interstate Commerce Commission in support of their application for authority for the unification of eleven of these companies, with a total mileage of 4,489, by lease to the Texas & New Orleans.

"The proposed lease," the brief says, "will bring about simplification and unification in management rather than unification of properties, for the properties were practically unified long prior to March 1, 1920. It will enable the applicant and the carriers to effect a saving, principally in printing and in clerical and accounting expenses, of between \$350,000 and \$400,000 per year. It will relieve the applicant and the carriers of additions to their capital accounts exceeding \$47,000 per year simply by virtue of the fact that company material transported by one or more lines for use on another or others will no longer be required to pay the regular tariff rates, but will be transported at the so-called company rate of five mills per ton per mile. It will enable the interested carriers to efficiently and satisfactorily conduct their operations with materially reduced stocks of materials and supplies and will thereby reduce the amount of working capital required for their operations. It will reduce the clerical work of foreign lines as well as of the applicant and of the carriers in connection with the settlement of interline freight and passenger accounts and it will generally simplify and clarify the relations between the public and the several interested lines."

**SPOKANE, COEUR D'ALENE & PALOUSE.—Acquisition.**—This company has applied to the Interstate Commerce Commission for authority to acquire and operate the lines of the Spokane & Eastern Railway & Power Company and of the Inland Empire, to operate over the tracks of the Great Northern into its terminals at Spokane, and to abandon about a mile of track now operated by the Spokane & Eastern in the city of Spokane. Authority is also asked to issue \$860,000 of promissory notes and to assume obligation for \$442,000 of bonds issued by the Coeur D'Alene & Spokane, which are secured by a mortgage on the property of the Spokane & Eastern. The proposed purchase price for the two lines is \$1,250,000.

**SUMPTER VALLEY.—Securities Authorized.**—The Interstate Commerce Commission

has authorized the issuance of \$650,000 6 per cent first (closed) mortgage serial bonds and a promissory note for \$100,000, the bonds to be sold to the Lumbermen's Trust Company of Portland, Ore., at 91.5 and the note to be delivered to the Oregon Lumber Company at par. The purpose of this financing is to refund maturing obligations.

**TEXAS & PACIFIC.—Control of Cisco & Northeastern.**—The Interstate Commerce Commission has authorized the Texas & Pacific to acquire control, by purchase of capital stock, of the Cisco & Northeastern, which extends from a connection with the Texas & Pacific at Cisco, Tex., to Breckenridge, 28.2 miles. The Cisco & Northeastern was recently authorized to construct an extension of its line from Breckenridge to Throckmorton, about 40 miles, and the commission notes its expectation that this project will be carried on by the new owners.

**Control of Abilene & Southern.**—J. L. Lancaster, president of the Texas & Pacific, has announced that negotiations are practically concluded for the purchase of the Abilene & Southern, which extends from Ballinger to Hamlin, 96 miles, crossing the Texas & Pacific at Abilene.

**TOLEDO, PEORIA & WESTERN.—Reorganization.**—The Toledo, Peoria & Western Railroad has applied to the Interstate Commerce Commission for authority to acquire and operate the property of the old Toledo, Peoria & Western Railway, which has been sold under foreclosure to George P. McNear, Jr., for \$1,300,000. It is proposed to finance the purchase by the issue of \$1,000,000 of 6 per cent bonds, \$500,000 of 6 per cent preferred stock, and \$1,000,000 of common stock.

**VIRGINIAN.—Bonds.**—This company has applied to the Interstate Commerce Commission for authority to nominally issue \$3,663,000 of 5 per cent first mortgage 50-year bonds, to reimburse its treasury for expenditures not yet capitalized.

**WESTERN MARYLAND.—Bonds.**—This company has applied to the Interstate Commerce Commission for authority to nominally issue \$1,281,000 of first and refunding mortgage bonds at 5 per cent for the purpose of partially reimbursing the treasury for expenditures on capital account.

**WESTERN MARYLAND.—Equipment Trust.**—This company has applied to the Interstate Commerce Commission for authority for an issue of \$1,260,000 of 4½ per cent equipment trust certificates, to be used in the purchase of 20 decapod locomotives. The certificates are to be sold to Alex. Brown & Sons, of Baltimore, at 97.532, this being the highest bid received from six syndicates of bankers.

#### Average Price of Stocks and Bonds

	Jan. 4	Last week	Last year
Average price of 20 representative railway stocks...	102.23	102.48	98.17
Average price of 20 representative railway bonds...	97.51	97.45	94.32

#### Valuation Reports

The Interstate Commerce Commission has issued final or tentative valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes, as of the respective valuation dates, as follows:

FINAL REPORTS		
Alabama & Northwestern....	\$165,000	1919
Crosbyton-South Plains.....	428,195	1916
Pencoyd & Philadelphia.....	105,000	1917
TENTATIVE REPORTS		
Canadian Northern (in U. S.).....	982,000	1919
Cincinnati, Indianapolis & Western .....	11,715,000	1918
Chicago, Milwaukee & Gary.....	2,789,475	1915
Huntingdon & Broad Top Mountain .....	3,878,700	1918
Lake Erie, Franklin & Clarion .....	669,000	1917
Salt Lake City Union Depot.....	1,030,017	1919
Unity Railways .....	366,430	1916
Wilmington, Brunswick & Southern .....	\$287,500	1917

#### Dividends Declared

Akron, Canton & Youngstown.—Common, 4 per cent, payable January 1 to holders of record December 20.

Albany & Susquehanna.—2 per cent, extra, payable January 8 to holders of record December 22.

Allegheny & Western.—3 per cent, payable January 1 to holders of record December 21.

Atchison, Topeka & Santa Fe.—Common, \$1.75, quarterly, common, \$75, extra, both payable March 1 to holders of record January 28.

Atlanta & West Point.—4 per cent, payable December 31 to holders of record December 21.

Belt Railroad & Stock Yards of Indiana.—Common, 2 per cent, quarterly; preferred, 1½ per cent, quarterly, both payable January 1 to holders of record December 22.

Carolina, Clinchfield & Ohio.—Common, \$75, quarterly; common stamped certificates, 1¼ per cent, quarterly, both payable January 10 to holders of record December 31.

Delaware, Lackawanna & Western.—\$1.50, quarterly; \$1.00, extra, both payable January 20 to holders of record January 8.

Elmira & Williamsport.—Preferred, \$1.61, payable January 1 to holders of record December 20.

Georgia Railroad & Banking.—2½ per cent, quarterly, payable January 15 to holders of record January 1.

Houston & Texas Central.—2½ per cent, quarterly, payable January 10.

Hudson & Manhattan.—Preferred, 2½ per cent, semi-annually, payable February 15 to holders of record February 1.

Lehigh & Hudson River.—2 per cent, quarterly; 4 per cent, extra, both payable December 31 to holders of record December 31.

Lehigh Valley Coal Co.—\$1.25, semi-annually; \$25, extra, both payable February 1 to holders of record January 8.

Missouri-Kansas-Texas.—Preferred A, 1½ per cent, quarterly, payable February 1 to holders of record January 15.

New London Northern.—3¼ per cent, quarterly, payable January 1 to holders of record December 16.

New York, Ontario & Western.—1 per cent, payable January 31 to holders of record January 14.

Norfolk & Western.—Adjustment preferred, 1 per cent, quarterly, payable February 19 to holders of record January 31.

Northern Railroad of New Hampshire.—1¼ per cent, quarterly, payable January 3 to holders of record December 13.

Norwich & Worcester.—Preferred, 2 per cent, quarterly, payable January 3 to holders of record December 18.

Pennsylvania Company.—1½ per cent, quarterly, payable December 31 to holders of record December 22.

Philadelphia & Western.—Preferred, 1¼ per cent, quarterly, payable January 15 to holders of record December 31.

Pittsburgh, Cincinnati, Chicago & St. Louis.—2½ per cent, payable January 20 to holders of record January 10.

Reading Company.—Common, 2 per cent, quarterly; common, 2 per cent, extra, both payable February 10 to holders of record January 13.

Rome & Clinton.—2¼ per cent, payable January 1 to holders of record December 22.

Texas & Pacific.—Preferred, 5 per cent, annually, payable December 31 to holders of record December 31.

Troy Union.—6 per cent, payable January 15 to holders of record December 31.

Wabash.—Preferred A, 1¼ per cent, quarterly, payable February 25 to holders of record January 25.

Western Railway of Alabama.—4 per cent, payable December 31 to holders of record December 21.

## Railway Officers

### Executive

**W. J. Fripp**, general manager of the New York Central Railroad, Buffalo and East, with headquarters at New York City, has been appointed assistant vice-president, with the same headquarters.

**Gerald Hughes** has been elected chairman of the board of directors of the Denver & Salt Lake Railway, a new corporation succeeding the receivership of the Denver & Salt Lake Railroad which ended on December 31. **William R. Freeman**, receiver and manager of receivership, was elected president, with headquarters at Denver, Colo. **L. C. Phipps, Jr.**, has been elected treasurer; **A. F. Dodd**, treasurer under the receivership, has been elected assistant treasurer; **D. C. Bromfield** has been elected secretary, with **S. S. Meyer**, assistant to the receiver and auditor, as auditor.

### Operating

**W. H. Staniland** has been appointed trainmaster of the Toronto, Hamilton & Buffalo, with headquarters at Hamilton, Ont.

**J. W. Mode**, acting superintendent of the Amarillo division of the Ft. Worth & Denver City, has been promoted to superintendent, with headquarters at Amarillo, Tex., succeeding **R. G. Fitzpatrick**, retired.

**David B. Fleming**, general superintendent of the First district of the New York Central Railroad, with headquarters at Albany, N. Y., has been appointed assistant general manager of the lines Buffalo and East, with headquarters at



D. B. Fleming

Syracuse, N. Y. Mr. Fleming was born on February 12, 1877, at Snowshoe, Pa., and received a high school education. He entered railway service in July, 1893, as a telegraph operator on the Pennsylvania division of the New York Central & Hudson River (now a part of the

New York Central), and in October, 1899, he became a train dispatcher. In February, 1903, he became chief dispatcher and in November of the following year he was appointed assistant trainmaster. He became trainmaster of the Mohawk division in October, 1906, and in November, 1910, was appointed assistant superintendent of the Hudson division. Mr. Fleming was transferred to the Mohawk division as assistant superintendent in July, 1911, and in September, 1913, was appointed superintendent of the Buffalo division. He was transferred in the same capacity to the Mohawk division in April, 1918, and in May, 1924, was promoted to general superintendent at Albany, which position he was holding at the time of his recent appointment as assistant general manager.

**F. S. Risley**, superintendent of the Syracuse division of the New York Central Railroad, with headquarters at Syracuse, N. Y., has been appointed general superintendent of the First district, with headquarters at Buffalo, N. Y., succeeding **D. B. Fleming**, promoted. Mr. Risley was born on September 6, 1879, at Kingston, N. Y., and was educated in



F. S. Risley

the common schools. He entered railway service in 1898, as a telegraph operator on the River division of the New York Central and subsequently served as copying operator, train dispatcher and assistant trainmaster of the same division. He became a trainmaster at Richland, N. Y., in September, 1908, and was transferred in the same capacity to the Mohawk division at Albany, in 1910. In 1913 Mr. Risley was appointed assistant superintendent of the Mohawk division, with the same headquarters. In May, 1924, he was appointed superintendent at Buffalo, N. Y., and later in the same year was transferred in the same capacity to the Syracuse division at Syracuse, which position he held until his recent appointment as general superintendent.

**D. W. Dinan**, assistant general manager of the New York Central Railroad, with headquarters at Syracuse, N. Y., has been appointed general manager of the lines Buffalo and East, with headquarters at New York City. Mr. Dinan was born on November 14, 1866, at Whiteport, N. Y., and was graduated from New Paltz Academy in June, 1883. He entered railway service in December of the same year as a station agent and telegrapher for the Walkill Valley (now a part of the New York Central), at Binnewater, N. Y. He served subsequently from March, 1886, to November, 1900, as train dispatcher on the West Shore (now also a part of the New York Central) at Kingston, N. Y., and then served consecutively as trainmaster and chief trainmaster of the Pennsylvania division of the New York Central at



D. W. Dinan

Jersey Shore, Pa. On October 1, 1904, he was appointed assistant superintendent of the same division and in May of the following year was promoted to superintendent at Corning, N. Y. He became superintendent of the Mohawk division at Albany, N. Y., on April 1, 1911, and general superintendent of the Second district at Buffalo, N. Y., on May 1, 1917. In 1924 Mr. Dinan was promoted to assistant general manager, at Syracuse, which position he was holding at the time of his recent appointment as general manager.

The jurisdiction of **A. R. Ayers**, assistant general manager of the Nickel Plate District and the Lake Erie & Western District of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, has been extended to cover the system.

**L. W. Bowen**, superintendent of the Alamosa division of the Denver & Rio Grande Western, with headquarters at Alamosa, Colo., has been transferred to the Salida division, with headquarters at Salida, Colo., succeeding **C. B. Carpenter**, transferred to the Alamosa division, with headquarters at Alamosa.

**M. Courtney** has been appointed superintendent of the Chicago terminals of the Grand Trunk, with jurisdiction over the Hayford subdivision, Chicago to Griffith, inclusive, with headquarters at



Elsdon, Ill. **J. M. Sommers**, trainmaster at Battle Creek, Mich., will have jurisdiction over the South Bend subdivision, also Nichols yard.

**F. N. Melius**, general superintendent of the New York Terminal district and assistant manager of the marine department of the New York Central, with headquarters at New York, has been appointed marine manager, with the same headquarters, succeeding **Walter B. Pollock**, who after 43 years of service has retired under the pension regulations. Mr. Melius will continue to perform the duties of general superintendent of the New York Terminal district.

**Charles L. Simpson**, assistant superintendent of the Minnesota division of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Harvey, N. D., has been promoted to superintendent of the Missouri River division, with headquarters at Bismarck, N. D., succeeding **Scott W. Derrick**, retired on January 1. Mr. Derrick was born on October 29, 1857, at Milwaukee, Wis., and entered railway service in 1871 as a telegraph operator on the Chicago, Milwaukee & St. Paul. He then served successively as brakeman, conductor, chief train dispatcher and superintendent of telegraph at various points on the Milwaukee until 1901 when he was appointed superintendent on the Soo, with headquarters at Oakes, N. D. In 1904 Mr. Derrick was transferred to Bismarck, N. D., as superintendent of the Missouri River division, a position he has held continuously until his retirement.

**Walter O. Miller**, superintendent of the Canadian Pacific, with headquarters at Nelson, B. C., has retired after nearly 44 consecutive years of service with this company. Mr. Miller was born on September 30, 1862, at Fordwich, Ont., and entered railway service on May 1, 1877, as an operator on the Hamilton & Northwestern (now a part of the Grand Trunk), serving later as an agent. On May 4, 1883, he entered the Canadian Pacific service as an operator and agent and on May 5, 1884, he was promoted to train dispatcher. Two years later he became chief clerk in the office of a superintendent and on October 1, 1887, he was appointed chief train dispatcher at Vancouver, B. C., where he remained until July 1, 1897, when he was appointed an agent at Kamloops, B. C. Mr. Miller became car service and fuel agent at Vancouver on July 1, 1899, and in October, 1908, he was promoted to superintendent, with the same headquarters. In March, 1910, he was transferred to Nelson, B. C., which position he held at the time of his retirement.

**M. E. Welch**, superintendent of the Buffalo division of the New York Central Railroad and the Ottawa & New York, with headquarters at Buffalo, N. Y., has been appointed superintendent of the Syracuse division, with headquarters at Syracuse, N. Y. **A. H. Wright**, superintendent of the River division, at Weehawken, N. J., has been appointed assistant to the general super-

intendent of the New York Terminal District and the marine manager. **J. E. Davenport**, superintendent of the Adirondack and Ottawa divisions, with headquarters at Utica, N. Y., has been appointed superintendent of the River division, with headquarters at Weehawken, N. J. **W. A. Hamler**, superintendent of the St. Lawrence division at Watertown, N. Y., has been appointed superintendent of the Buffalo division at Buffalo. **C. F. Moyer**, superintendent of the Ontario division, with headquarters at Oswego, N. Y., has been appointed superintendent at Watertown, N. Y., to succeed Mr. Hamler. **C. E. Olp**, assistant superintendent of the Syracuse division at Syracuse, has been appointed superintendent of the Ontario division at Oswego. **J. K. Brown**, assistant superintendent of the Buffalo division at Buffalo, has been appointed superintendent of the Adirondack and Ottawa divisions, with headquarters at Utica, N. Y. **C. J. Curtin** has been appointed chief supervising agent at Syracuse, N. Y.

**William C. Ranous**, superintendent of transportation of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., has been appointed general superintendent of transportation, a newly created position. **C. E. Urbahn**, general superintendent, with headquarters at Minneapolis, will have jurisdiction over the Twin City Terminal, Gladstone, Duluth-Superior, Minnesota, Winnipeg and Missouri River divisions. **Albert N. Williams**, assistant to the president, with headquarters at Minneapolis, has been promoted to general superintendent of the Chicago district consisting of the Chicago Terminal, Fond du Lac and Stevens Point divisions.

Mr. Williams was born on June 14, 1888, at Denver, Colo., and was graduated from Yale University. He entered railway service in June, 1906, as a rodman on the Denver, Northwestern & Pacific (now a part of the Denver & Salt Lake), and in September of the same year he became a machinist's apprentice on the Denver & Rio Grande. From 1907 to 1910 he spent in graduate work at the Sheffield Scientific School of Yale University, re-entering railway service in July, 1910, as a brakeman on the Union Pacific. Later he acted as section foreman, extra gang foreman and timekeeper on this railroad, and from May to July, 1912, he was inspector of equipment. At the end of that time he was appointed superintendent on the Missouri, Kansas & Texas, of Texas, with headquarters at Trinity, Tex., and during 1913 he acted as trainmaster. In January, 1914, he was appointed trainmaster on the Chicago, Rock Island & Pacific, and in February, 1916, he accepted a position in the same capacity on the Missouri, Kansas & Texas. Mr. Williams left railroad service in March, 1917, to work with petroleum interests in the United States and Mexico, where he remained until May, 1921, when he was appointed assistant general manager of the Midland Valley. In October, 1922, he was promoted to general manager, and in March, 1926, he was appointed to the staff of the president of the Soo line on

special assignments, with headquarters at Minneapolis, Minn., a position he held until his promotion to general superintendent.

## Financial, Legal and Accounting

**E. C. Calhoun** has been appointed assistant general solicitor of the New York Central, with headquarters at New York, succeeding **Parker McColester**, who has resigned.

**Herbert V. Clemens**, who has been appointed assistant general auditor of the New York, New Haven & Hartford, with headquarters at New Haven, Conn., was born on March 27, 1882, at Philadelphia, Pa., and was educated in the Delano, Pa., high school. In July, 1898, he entered the service of the Lehigh Valley Coal Company as car clerk, and in January, 1899, went to the Lehigh Valley Railroad, and until 1904, served as freight and ticket clerk, yard clerk and relief yardmaster, telegraph operator and station agent. The following year and half he was in the United States Army Signal Corps as a telegrapher in the Philippines with the assignment as operator in charge at Camp Wallace, San Fernando de Union, Luzon. He returned to railroad service with the New York, New Haven & Hartford on May 4, 1906, and until July 7, 1916, was successively waybill clerk, report clerk, personal clerk and accountant. From the latter date until September 16, 1919, he was traveling accountant, head voucher clerk and chief clerk. On September 16, 1919, he became special accountant in the comptroller's department, which position he held until July 28, 1921, when he became assistant auditor of disbursements. On May 1, 1922, he was appointed auditor of freight receipts, which position he was holding at the time of his recent appointment as assistant general auditor.

## Traffic

**C. P. Kirby** has been appointed assistant general freight agent of the Missouri-Kansas-Texas, with headquarters at St. Louis, Mo.

**P. F. Harding**, general agent on the Yosemite Valley, with headquarters at Merced, Cal., has been promoted to general freight and passenger agent, with the same headquarters.

**Stewart J. Alton**, assistant to the general traffic manager of the Canadian National, has been appointed manager of the rate and tariff bureau, with headquarters at Montreal, Que.

**C. F. Farmer** has been appointed general agent on the Union Pacific, with headquarters at Pasadena, Cal., succeeding **F. H. Adams**, assigned to other duties.

**Granville S. Trowbridge**, assistant to the general traffic manager of the St. Louis Southwestern, with headquarters at St. Louis, Mo., has resigned and will

be associated with a church organization at Independence, Mo.

**H. J. Walters**, assistant to the general superintendent of transportation of the Merchants Despatch Refrigerator Line and the Eastern Refrigerator Despatch, has been promoted to general agent, with headquarters at New York City. **F. L. Wigney**, formerly car service agent, has been promoted to general agent, with headquarters located at Chicago.

**A. J. Lehmann**, assistant general freight agent on the St. Louis Southwestern, with headquarters at St. Louis, Mo., has been promoted to general freight agent, with the same headquarters. **E. S. White**, general agent in the freight department at St. Louis has been promoted to assistant general freight agent with the same headquarters. **A. J. Leber** has been appointed assistant general freight agent with headquarters at St. Louis.

**G. G. Early**, general freight agent of the Wabash, with headquarters at St. Louis, Mo., has been promoted to assistant freight traffic manager with the same headquarters, succeeding **W. T. Lyman**, who has resigned to accept other employment. **C. J. Sayles**, assistant general freight agent, with headquarters at St. Louis, has been promoted to general freight agent with the same headquarters, replacing Mr. Early. Mr. Sayles will work with Mr. Early in charge of rate legislation. **R. A. Belding**, industrial agent with headquarters at St. Louis, has been promoted to general freight agent with headquarters at St. Louis, and will work with **H. G. Holden**, assistant freight traffic manager, in charge of solicitation of traffic. **L. E. Clarahan**, division freight agent with headquarters at Omaha, Neb., has been promoted to industrial agent, succeeding Mr. Belding.

**Marvin R. Maxwell**, general freight agent on the New York Central with headquarters at Cleveland, Ohio, has been promoted to assistant freight traffic manager with headquarters at Chicago. **James Webster**, assistant traffic manager with headquarters at Chicago, retired on January 1 under the pension rules of the company, and the position of assistant traffic manager at Chicago has been abolished. **T. J. Cook**, general freight and passenger agent with headquarters at Toledo, Ohio, has been appointed general freight agent at Cleveland, succeeding Mr. Maxwell, and the office of general freight agent on the Ohio Central lines at Toledo has been abolished. **B. J. Torbron**, assistant general freight agent with headquarters at Buffalo, N. Y., has been promoted to general freight agent with headquarters at Chicago. Mr. Webster was born on December 14, 1856, at Owen Sound, Ont., and entered railway service in 1874 as a telegraph operator, remaining with Canadian railways in this capacity and as a stenographer until 1882 when he was appointed a commercial agent on the New York, Chicago & St. Louis. He

served later with this railroad as an assistant general freight agent and as a general freight agent until 1910 when he was appointed assistant freight traffic manager of the New York Central lines. In 1917 Mr. Webster was promoted to freight traffic manager of the New York Central Railroad, lines west, and in 1920 he was appointed assistant traffic manager of the entire company with headquarters at Chicago, a position he held up to the time of his retirement on January 1.

**Joseph F. Garvin**, assistant freight traffic manager of the Missouri-Kansas-Texas of Texas, with headquarters at Dallas, Tex., has been promoted to freight traffic manager of the Missouri-Kansas-Texas lines, with headquarters at St. Louis, Mo., and Dallas, succeeding **George T. Atkins**, elected vice-president in charge of traffic. Mr. Garvin was born on October 7, 1878, at St. Louis, and entered railway service in 1894 as a messenger in the telegraph department of the Missouri Pacific, serving consecutively until March 4, 1895, as a clerk to the general manager, clerk to the general superintendent and stenographer to the general superintendent. He then became a stenographer in the freight



Joseph F. Garvin

traffic department of the Missouri-Kansas-Texas, remaining there until January 25, 1898, when he was appointed as a clerk to the general superintendent of the St. Louis, Iron Mountain & Southern at St. Louis. On August 3, 1899, he was promoted to secretary to the vice-president and traffic manager of the Katy at St. Louis, and three years later he was appointed chief clerk to the same officer. Mr. Garvin was transferred to the freight traffic department at the same place on June 1, 1908, where he remained until September 1, 1911, when he was promoted to assistant general freight agent of the Missouri-Kansas-Texas of Texas, with headquarters at Dallas. On April 15, 1914, he was again promoted to general freight agent to the same company, which position he held at the time of his appointment as freight traffic manager of the entire Katy system.

## Mechanical

**K. A. Lentz**, erecting shop foreman of the Southern, with headquarters at Spencer, N. C., has been promoted to shop superintendent, with the same headquarters.

The jurisdiction of **W. G. Black**, superintendent of motive power of the Nickel Plate District and the Lake Erie & Western District of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, has been extended to cover the system.

**J. B. Crahan**, general foreman of the locomotive department of the Missouri Pacific, with headquarters at St. Louis, Mo., has been appointed master mechanic of the Wichita division, with headquarters at Wichita, Kan., succeeding **J. P. Downs**, resigned.

## Engineering, Maintenance of Way and Signaling

The jurisdiction of **A. C. Harvey**, chief engineer of the Nickel Plate District and the Lake Erie & Western District of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, has been extended to cover the system.

**Clark Dillenbeck**, assistant chief engineer of the Reading, with headquarters at Philadelphia, Pa., has been appointed chief engineer, with the same headquarters, succeeding **S. T. Wagner**, who has been appointed consulting engineer. Mr. Dillenbeck was born on June 24, 1866 at Palatine Bridge, N. Y. He was educated in the public schools, later being graduated from Canajoharie Academy and in 1888 from Cornell Uni-



Clark Dillenbeck

versity with the degree of civil engineer. He entered railway service in May, 1890, as an assistant engineer on the Philadelphia & Reading (now the Reading), and has since served that road continuously. In January, 1914, Mr. Dillenbeck was appointed engineer of bridges and buildings, and in January, 1919, was appointed assistant chief engineer, which position he was holding at the time of his recent appointment as chief engineer.



**Samuel T. Wagner**, chief engineer of the Reading, with headquarters at Philadelphia, has retired from active duty, and has been appointed consulting engineer. Mr. Wagner was born on August 30, 1861, at Philadelphia, and was graduated from the University of Pennsylvania in 1881. From 1881 until 1893 he was with the Phoenix Iron Company, starting as a draftsman, then becoming inspector, assistant master mechanic and finally superintendent of shops. From 1894 until 1900 Mr. Wagner was assistant engineer in charge of the Pennsylvania avenue subway and tunnel, and from the latter date until 1902, was assistant engineer in charge of improvement and filtrations of water supply, being appointed to both divisions by the Bureau of Surveys of Philadelphia. He entered the service of the Philadelphia & Reading (now the Reading) on March 1, 1902, and from that time until 1915, was in charge of the



S. T. Wagner

abolishment of grade crossings of that company. On April 6, 1915, he was appointed chief engineer, which position he was holding at the time of his retirement from active service.

**F. B. Freeman**, chief engineer of the Boston & Albany since 1909, has been appointed chief engineer of the New York Central, Buffalo and east, succeeding **George W. Kittredge**, retired. Mr. Freeman was born April 2, 1867, in Dublin, Ireland, and was educated at the Rathmines school and Royal College of Science, Ireland. He entered railroad service on January 1, 1886, as a mechanical apprentice in the Inchecora shops of the Great Southern Railway of Ireland, from which, in 1887 he went to the Horwich shops of the Lancashire & Yorkshire Railway of England. From 1887 to 1889 he again attended the Royal College of Science, Ireland, after which, to 1890, he was construction engineer of the Loughrea & Ahymon Railway of Ireland. In 1890 he became construction assistant engineer of the Ballinrobe & Claremorris Railway, from which time he held the following positions: 1890-91, survey assistant engineer of the Westport & Mulraney Railway; 1891, construction sub-agent of the Claremorris & Collooney Railway; 1891-92, construc-

tion sub-agent of the Westport & Mulraney Railway; 1892, legal work in connection with right-of-way for the Newmarket & Kanturk Railway and the Tarlee & Dinglo Railway of Ireland; 1892-94, assistant engineer in the firm of Kingsley & Brewer, civil engineers at New York; 1894 in the service of the South Orange & Maplewood Street Railway; 1894 to 1900, assistant engineer in the bridge department of the Erie; 1900-01, chief draftsman, New York Central & Hudson River; 1901-02, assistant engineer in charge of design on



F. B. Freeman

the same road; 1902, assistant engineer of construction on the same road, with headquarters at Syracuse, N. Y.; 1902-03, superintendent of construction of the Catawba Power Company, Indiana Hook Shoals, South Carolina; 1903, with H. De B. Parsons, civil engineer, New York, on design, estimates and drafting. In 1903, after his long varied career, he returned to the New York Central & Hudson River as assistant engineer of joint facilities and agreements, which position he held until 1905 when he became designing engineer. In 1907 he became engineer of construction, and held this position until 1909 when he was appointed chief engineer of the Boston & Albany, with headquarters at Boston.

**George W. Kittredge**, chief engineer of the New York Central, Buffalo and east, since April, 1906, has been retired under the pension regulations of that company. He was born December 11, 1856, at North Andover, Mass., and received his higher education at the Massachusetts Institute of Technology from which he was graduated in 1877, thereafter entering private engineering practice on the South Boston flats improvements, Boston, Mass. He entered railroad service in 1880 on the Pittsburgh, Cincinnati & St. Louis in the maintenance of way department, after which time, up to 1890, he was connected with the Pennsylvania, lines west of Pittsburgh. From 1890 to July, 1891, he was engineer maintenance of way and assistant chief engineer of the Cleveland, Cincinnati, Chicago & St. Louis. On July 1, 1891, he became chief engineer of that road and at the same

time chief engineer of the Louisville & Jeffersonville Bridge Company, which positions he held until April, 1906, when he became chief engineer of the New



G. W. Kittredge

York Central & Hudson River, now a part of the New York Central, and also chief engineer of the Jersey Junction, the Hudson River Connecting and the American Niagara. During 1902-03 Mr. Kittredge was president of the American Railway Engineering and Maintenance of Way Association, now the American Railway Engineering Association. Since 1913 he has been a member of the President's Conference Committee on Federal Valuation of Railroads and has been chairman of the eastern group, engineering committee. Since 1914 he has been a member of the executive committee and vice-president of the Eastern Railroad Association.

**George A. Kirley**, signal engineer and superintendent of telegraph on the Boston & Albany, with headquarters at



G. A. Kirley

Boston, Mass., has been appointed chief engineer of that road, with the same headquarters, succeeding **F. B. Freeman**, who has been appointed chief engineer of the New York Central, Buffalo and East. Mr. Kirley was born on August 31, 1880, at Fairfield, Vt., and received his preparatory education at Brigham Academy, Bakersfield, Vt., following

which he took a course in engineering at the University of Michigan, being graduated in 1907. The same year he entered the service of the New York Central as a draftsman in the signal department, at New York. In May, 1909, he went to the Boston & Albany, and since that time has been in the continuous service of the signal department of that road, serving consecutively as draftsman, chief draftsman and as an assistant engineer, until his appointment as signal engineer in 1918, which position he was holding at the time of his recent promotion to chief engineer.

## Purchases and Stores

The jurisdiction of **R. L. Tindal**, purchasing agent of the New York, Chicago & St. Louis with headquarters at Cleveland, Ohio, has been extended to cover the entire system following the discontinuance of the purchasing department of the Clover Leaf district at Toledo, Ohio.

**E. G. Walker**, chief clerk in the purchasing department of the Atchison, Topeka & Santa Fe, who has been promoted to assistant general purchasing agent, with headquarters at Chicago, was born on October 5, 1870, on a farm near Howe, Ind. He graduated from the Goshen (Ind.) High School in 1887



E. G. Walker

and for several years taught school and studied law. In 1894 he returned to his farm and in 1898 he entered railway service in the stores department of the Lake Shore & Michigan Southern (now a part of the Michigan Central) at Elkhart, Ind. He remained at this point until 1903, when he entered the stores department of the Santa Fe in a clerical capacity at Albuquerque, N. M. Mr. Walker served for a short time in 1904 on the Chicago, Rock Island & Pacific at Moline, Ill., and in 1905 he returned to the Santa Fe at Topeka and was then transferred to Chicago, being promoted to assistant chief clerk of the purchasing department in 1910. In November, 1913, he was promoted to chief clerk, holding that position until his promotion to assistant general purchasing agent on December 1.

## Special

**W. M. Gordon**, superintendent of the Canadian Pacific Express Company, with headquarters at Winnipeg, Man., has been transferred to the Pacific division, with headquarters at Vancouver, B. C., succeeding **Richard Helme**, retired at his own request on account of ill health. **R. N. Simpson**, assistant superintendent, with headquarters at Winnipeg, has been promoted to superintendent at that point.

## Obituary

**W. L. Boslooper**, supervising safety agent of the Michigan Central, with headquarters at Detroit, Mich., died on December 29 following an attack of bronchial pneumonia.

**Charles Page**, president of the Sand Springs since 1915 and also treasurer until 1926, died on December 27 at his home in Sand Springs, Okla., following an attack of influenza. Mr. Page was 67 years old at the time of his death.

**Robert Bell**, at one time superintendent of the Buffalo and Rochester divisions of the Pennsylvania, with headquarters at Buffalo, N. Y., died on December 19, 1926, at Buffalo, at the age of 82.

**Edgar W. Gillett**, general freight and passenger agent of the San Pedro, Los Angeles & Salt Lake from 1901 to 1906, died on December 17 at Riverside, Cal. Mr. Gillett was born on February 22, 1861, at Lancaster, Ind. He entered railway service at the age of 16 as a messenger boy on the Union Pacific. He then served successively as telegraph operator, in train service, in machine shops, as station agent, ticket agent, clerk in the general office and general agent until 1901 when he was promoted to general freight and passenger agent of the San Pedro, Los Angeles & Salt Lake, with headquarters at Los Angeles, Cal. In October, 1906, he resigned to become secretary of the Chamber of Mines at Los Angeles and in March, 1907, he returned to railway service as general freight and passenger agent and later traffic manager of the Las Vegas & Tonopah. He remained in this position until 1909, when he again resigned to engage in other business.

**Alexander Mahon Acheson**, vice-president and chief engineer of the Waco, Beaumont, Trinity & Sabine, died on December 29, at his home in Trinity, Tex. Mr. Acheson was born on July 20, 1858, and attended Washington and Jefferson college, Washington, Pa., from 1876 to 1879. He entered railway service in the following year as a rodman on the New York, Lake Erie & Western (now, a part of the Erie), and in 1881 he became a levelman on the New York, West Shore & Buffalo (New York Central). From 1883 to 1885 he served as a trainman on the Pennsylvania and for the following two

years he acted in various capacities on surveys for projected lines of this company. In 1887 he was appointed assistant engineer on the St. Paul, Minneapolis & Manitoba (now a part of the Great Northern), accepting a similar position on the Missouri, Kansas & Texas of Texas in 1889. Mr. Acheson was promoted to resident engineer, with headquarters at Dallas, Tex., in the following year, and in 1906 he was appointed division superintendent. In 1909 he was promoted to chief engineer, with headquarters at Dallas, serving from December, 1912, to October, 1914, in addition as chief engineer of operation of the Missouri, Kansas & Texas, with headquarters at St. Louis, Mo. He was then appointed superintendent of the Trinity district, with headquarters at Trinity, Tex., and in September, 1923, he was elected vice-president, general manager and chief engineer of the Waco, Beaumont, Trinity & Sabine, with the same headquarters. Later Mr. Acheson relinquished the duties of general manager but remained as vice-president and chief engineer until his death.

**Horace A. Sumner**, one time chief engineer of the Denver & Salt Lake, died on December 31, at his home in Denver, Colo. Mr. Sumner was born on March 18, 1845, at Stoughton, Mass., and graduated from Francis Sumner's Academy in 1864. He entered railway service in July, 1864, as a rodman on the Old Colony (now controlled by the New York, New Haven & Hartford) and in March, 1868, he was appointed an assistant engineer on the Burlington & Missouri River and the Burlington & Southwestern in Iowa (now parts of the Chicago, Burlington & Quincy). From June, 1873, to December, 1874, Mr. Sumner was engineer of the board of public works of Burlington, Iowa, returning to railway service as chief engineer and superintendent of track, bridges and buildings of the Chicago, Burlington & Kansas City and the St. Louis, Keokuk & Northwestern (now parts of the Burlington). From July, 1880, to July, 1885, he was resident engineer on construction of the Chicago, Burlington & Northern (now a part of the Chicago, Burlington & Quincy), in Wisconsin. In July, 1886, he was appointed locating engineer on the Colorado, west of Denver (now a part of the Colorado & Southern), and in the following year he became assistant engineer on the Denver & Rio Grande where he remained until April, 1893, when he was appointed chief engineer of the Florence & Cripple Creek (now a part of the Cripple Creek & Colorado Springs). From April, 1895, to April, 1897, he was state engineer of Colorado and in April, 1897, he was appointed chief engineer of the El Paso & Northwestern and the Alamogordo & Sacramento Mountain (both now controlled by the Southern Pacific). On August 1, 1902, he was appointed chief engineer of the Denver, Northwestern & Pacific (now the Denver & Salt Lake) a position he held until August, 1910, when he left railroad service.



